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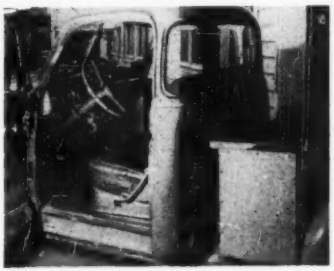

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Journal of Forestry

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Contents

Society Holds Successful Meeting in Seattle 954

Recent Development in Silvicultural Practices in the Douglas-Fir Region 957
Leo A. Isaac

Aerial Photographs—An Effective Tool in Management Plan Surveys 961
Grover A. Choate

Use of "Ammate" for Poisoning Ponderosa Pine in Stand Improvement 966
Francis R. Herman

Further Results on Loblolly Pine Seed Production and Dispersal 968
K. B. Pomeroy and C. F. Korstian

Reforestation in Japan 971
Donald J. Haibach

Cronartium Fusiforme on Slash and Loblolly Pine in the Piedmont Region of Alabama 978
James F. Goggans

Private Management of Monterey Pine at Nelson, New Zealand 981
H. H. Chapman

Notes 983

We Present 985

Reviews 987

Current Literature 994

Society Affairs 997

Forestry News 1024

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Journal of Forestry

Official Organ of the Society of American Foresters

Society Holds Successful Meeting in Seattle

More than 800 persons participated in the annual meeting of the Society of American Foresters held in Seattle, Wash., from October 10 to 15, 1949. The meeting comprised two general sessions, a Society Affairs session, conferences of nine subject divisions, and field trips to nearby forest industries and timber operations. The final event of the week was the dedication of the Gifford Pinchot National Forest, named for the first president of the Society. Tours, luncheons, and other entertainment were provided for visiting ladies.

President Clyde Martin opened the general sessions and presided at a joint meeting of Section delegates and Council members on October 10. In an address before the Society Affairs session he reported that the Society will close this year with a small surplus, the first in several years. He also called attention to the adoption of the Code of Ethics, the development and authorization of Chapters, plans for further improvement of the Journal of Forestry, and the desirability of establishing Society policy on broad principles.

Theme of the first general session was "Forestry in the Pacific Northwest" while the topic of the final session was "Current Forestry Problems."

Wednesday, October 12, was devoted to meetings of the subject Divisions. Issues and developments related to private forestry, silviculture, forest recreation, forest products, forest economics, forest wildlife management, range management, education, and public relations were considered.

Governor Arthur B. Langlie of Washington was the principal speaker at the annual banquet on October 12. A feature of the banquet program was the presentation of myrtle wood gavels to visiting Sections by William Eastman, chairman of the Puget Sound Section. He also presented an alder tray, suitably inscribed, to Mr. Martin in recognition of his service as president of the Society.

Eric Druce, president of the Canadian Society of Forest Engineers; Dr. Florencio Tamesis, director of forestry of the Philippine Republic; and foresters from several other foreign countries were in attendance.

Kenneth M. Murdock was chairman of the Committee on Local Arrangement. Members of his committee were Charles S. Cowan, E. F. Heacox, J. Kenneth Pearce, and H. L. Plumb. Lloyd Thorpe assisted in arranging transportation for the various field trips. James Stevens of Seattle assisted the publicity committee in disseminating information to the press.

The Program Committee was headed by Gordon D. Marckworth, with Horace J. Andrews, William D. Hagenstein, C. R. Patrie, and L. T. Webster as members.

The committee which arranged activities for ladies was composed of Mrs. Charles S. Cowan (chairman), Mrs. H. L. Plumb, Mrs. Clyde S. Martin, Mrs. Gordon D. Marckworth, and Mrs. Kenneth M. Murdock.

Members of the Puget Sound and Columbia River Sections contributed time, efforts, and finances to make the Seattle Meeting a success.

Displays on exhibition during the meeting were arranged by the following organizations: Forest Soils Committee of the Puget Sound and Columbia River Sections, Keep Washington Green, Delano Aerial Surveys, Pacific Marine Supply Company, Weyerhaeuser Timber Company, D. B. Smith Company, and Mili & Mine Supply.

Meeting of Council and Section Delegates

President Martin served as chairman at the joint meeting of the Council and Section delegates on the afternoon of October 10. Section delegates present were:

Allegheny, M. W. Humphrey.
Appalachian, N. T. Barron.
Central Rocky Mountain, W. H. Schaeffer.
Central States, J. Nelson Spaeth.
Columbia River, Dahl Kirkpatrick.

Gulf States, John W. Squires.
Inland Empire, Ernest Wohletz.
Intermountain, Lincoln Ellison.
New England, Lewis C. Swain.
Northern California, Ralph C. Hall.
Northern Rocky Mountain, Lincoln Mueller.
Ozark, Glen Durrell.
Puget Sound, Vincent W. Bousquet.
Southeastern, Terrill D. Stevens.
Southern California, Wm. G. Kohner.
Southwestern, George Meagher.
Washington, Arthur W. Sowder.
Wisconsin-Upper Michigan, Fred G. Wilson.

Three Sections were not officially represented: Kentucky-Tennessee, New York, and Upper Mississippi Valley.

The first subject discussed concerned Section activities designed to increase member interest and participation. Each delegate described methods used in his Section which had been found effective, particularly as related to Chapter operation. Some of the suggestions for good Section functioning included the following:

1. Select as officers men who have demonstrated their interests in Society affairs.
2. Include Chapter news in the Section's newsletter.
3. Encourage frequent Chapter meetings.
4. Utilize a Society affairs committee to keep the Section members posted on business and policy matters of the Society.
5. Encourage forestry students to plan and conduct at least one Chapter or Section meeting each year.
6. Report the advancements, transfers, activities, and accomplishments of Section members in the Section newsletter.
7. Pay the traveling expense of the official delegate to the annual meeting of the Society.
8. Anticipate the formation of Chapters by having the machinery for recognizing them set up in advance of their application.
9. Establish Chapter boundaries on state lines or on county lines if a smaller unit is desirable.
10. Rotate the place of the Section meeting throughout the Section's area.
11. Include Section programs of interest to those in fields allied to timber management.
12. Make use of members who have or might develop leadership abilities.
13. Plan meetings so that expenses of members attending will be reasonable.
14. To develop and maintain interest of members, plan frequent meetings and good meetings.

More Student Participation

The next subject discussed was that of student participation in Society activities. Several ways of developing student interest in, and knowledge of, Society activities and objectives were described. It was emphasized that guest speakers at forestry club meetings should be identified as Society members as well as in other capacities. Society members serving as guest speakers and those on forestry school faculties can be effective in acquainting students with the functioning of the Society and also in developing a professional attitude in them. The importance that employers place on Society membership was stressed. Several delegates pointed out that contacts of an individual member with a prospective candidate probably was the most effective means of recruiting eligible men. Since the adoption of the Code of Ethics for the forestry profession, several Sections have encouraged their members in the forestry schools to present the significance of the Code to the students. Essay contests were noted as a means for increasing student interest.

A closer official affiliation of students with the Sections was described as desirable by several delegates. It was suggested that students might be made "participating members" or "Section associate members."

Council member Paul M. Dunn reviewed a committee report of which he was a coauthor that had been made to the Council in 1946 dealing with the establishment of student chapters. Discussion following his presentation revealed that Society members at some schools would like to establish student chapters now, while others believed an official student member grade was a desirable forerunner of Chapter establishment. The close cooperation between Sections and students was considered a necessity in any event.

President Martin led a brief discussion on alternative means of establishing Society policy. He said that it was the opinion of the Council that the Society should take a firm stand on broad principles of forestry rather than attempt to state its support or opposition to specific bills introduced before Congress. He pointed out that bills are frequently amended during legislative procedures, thus precluding an accurate and current expression of the Society's membership.

Society Affairs Session

About 500 members were present at the Society Affairs session on the afternoon of October 11. In addition, about 40 Bremerton, Wash., high school forestry club members attended as guests.

President Martin gave his annual report, which was followed by committee reports published elsewhere in this issue.

Lloyd Thorpe, Seattle advertising representative for the JOURNAL OF FORETRY, outlined plans for advertising revenue. He believes that the JOURNAL can be made to be self-supporting within five years, and emphasized that the buying power of JOURNAL readers makes the JOURNAL a good medium through which many products can be sold. In order to improve the opportunities for JOURNAL advertising, he recommended (1) that more market information about readers be obtained, (2) that advertising space be made easier to sell by changing JOURNAL to a larger size, (3) that advertising sales expenses be included in the present budget, and (4) that members do "missionary" work in promoting advertising.

A four-member panel, with Paul M. Dunn as moderator, considered the proposal to modify the existing professional base for membership (Junior Member requirements). Fred G. Wilson and Perry O. Donaldson favored maintaining present requirements. Lincoln Ellison and DeWitt Nelson thought it advisable to allow persons trained in fields closely allied to timber management to become members after additional forestry experience and a demonstrated interest in forestry. Several other members commented from the floor, pointing out that action taken by the membership on the forthcoming referendum would profoundly affect accrediting procedures, the licensing of foresters, and the public's conception of foresters.

President Martin gave a resume of the Council's stand favoring the establishment of S.A.F. policy on national issues along broad principles rather than in connection with specific legislation.

Several members commented from the floor that they supported the Council in its decision.

Contents and Title Page Bound in Journal

Table of Contents and Title Page for Volume 47 will be found in the back of this issue. For binding purposes the complete section can be removed by opening the staples.

Recent Development in Silvicultural Practices in the Douglas-Fir Region[1]

Leo A. Isaac

Pacific Northwest Forest and Range Experiment Station, Portland, Oregon.

FOREST management in the Douglas-fir region is undergoing a great change, particularly on private lands. Timbered and cut-over lands that were given only casual protection in the past are now listed under the "tree farm" and other movements. The lands are being blocked up into management units and transformed from wild, undeveloped condition into the first stages of managed forest stands. Public agencies and large owners took the lead in the movement, but it has now extended all the way to small wood lot owners. The change has come about because of better markets, a dwindling supply of old-growth timber, and a gradual realization that most Douglas-fir lands are more valuable for growing forests than for other purposes and cannot profitably be converted to other uses. Vast areas are still mistreated and neglected, but the acreage under management is rapidly increasing.

The trend toward improved silvicultural practices is evident in each of the region's three broad classes of Douglas-fir lands: (a) cut-over lands and burns that have not restocked satisfactorily; (b) young-growth stands from the seedling stage to early maturity; (c) and old-growth stands that to date have been given no beneficial treatment other than protection. Both public agencies and private owners have recognized that it costs as much to raise a poor tree as a good one, and that well stocked stands of a good strain of the right species will pay the greatest dividends when raised as a crop.

Many speakers at this meeting will discuss in detail particular silvicultural practices that have developed. I will attempt only to summarize the more far-reaching discoveries and changes that are coming into use.

Hereditary Characteristics and Seed Sources

It is logical to start with a discussion of the hereditary characteristics of the tree and of seed sources. Our studies have shown that superior strains of Douglas-fir exist in the natural stands just as superior strains of wheat and corn exist. Several of these strains have been located, the seed collected, and they will be tested side by side in plantations.

We have also found that Douglas-fir has habitat limitations. The species will live and grow from sea level almost to timberline and over a wide range of latitude, but a strain growing in one locality often has specific and rather restricted climatic limitations under which it will make maximum growth and produce maximum quantity and quality of wood. To meet similar limitations of several species, European countries have restricted the elevation of a seed source to one hundred meters above or below the planting site. Here in the Northwest growth on existing plantations indicates that at least certain strains of Douglas-fir have a slightly wider range of climatic tolerance, and until more positive information is available a tentative limitation of 500 feet in elevation above or below the planting site is being proposed as a limit for seed collection, or a distance of 75 miles to the north or to the south of the planting site, if seed is collected at the same elevation. The point of seed origin for maximum growth in a plantation, with reasonable safety against climatic limitations, is a short distance below or to the south of the planting site. When moved far out of its natural climatic zone, Douglas-fir is highly subject to needle diseases (*Rhabdocline, Adelopus, Chermes cooleyi* and others). This susceptibility has been found to be a limiting factor in the use of some strains in European plantations. It has also been responsible for considerable damage in some of our own plantations here in the Northwest.

Tree form is important also. European plant-a tions and our own studies have shown that excessively limby and rough-boled parent trees are likely to produce rougher offspring than clean well-formed trees.

Many agencies doing planting have recognized the foregoing hereditary characteristics of Douglas-fir and select their own seed sources. Their cones are collected from well-formed trees in good stands within a safe climatic zone of their planting site. But on the whole, existing information on heredity and source of seed is not receiving sufficient attention in the general planting program to date.

[1]Presented at a meeting of the Division of Silviculture, Society of American Foresters, Seattle, Wash., October 12, 1949.

Artificial Reforestation

A change is coming about in artificial reforestation. Recent developments by the Fish and Wildlife Service in the poisoning of seed eating rodents and new poisons developed during the war have given new impetus to broadcast seeding both of naked and pelleted seed. Large areas are being seeded by helicopter and airplane; smaller areas are being seeded with a hand seeder, or in spots with a hand planting tool, several of which are now in the process of development. But the work is still in the experimental stage. Too little time has elapsed to give final results in the field. There still remains the job of determining just what ground conditions will permit broadcast seeding with reasonable chances of success, what seed should be sown, and how much should be sown per acre to assure full stocking. Spot seeding will not be a success until a hand planter is perfected that will plant a single seed (or two) in a spot, either in pelleted or naked form. Several seedlings growing in a small spot will not develop into a good stand unless thinned; thinning raises the cost of seeding above that of planting. The production of planting stock has developed to a point where 1-0 seedling stock is being found satisfactory for average and better sites, and 2-0 stock for the more severe sites and the higher elevations.

Natural Regeneration

Natural regeneration is still recognized as the safest means of securing a forest equal in quality to the one harvested, and today special regeneration measures are being taken. Fire is being used as a tool rather than as an agent of destruction. Improvements have been made in both burning technique and in timing. Many operators take special care to set fires when the surface of the forest floor is dry and the lower zones are moist so that burning will not injure the soil. The current year's seed crop is studied; if the crop is abundant enough to seed adjoining cut-over lands, every effort is made to exempt these lands from current slash burning. On the other hand, if the seed crop is light or a complete failure, areas of high fire hazard and areas that have excessive debris or brush and weed competition are slash burned if possible in order to improve the seed bed for the seed crop which may occur one, two, or three years hence. (This year's seed crop was medium, but our records show only 7 heavy and 9 medium crops during the past 40 years, and as many as 5 light crops have occurred in succession.) Areas are carefully scrutinized to determine where brush conditions are severe enough to take over the land before natural regeneration can become established. Such areas are often planted promptly instead of waiting for a good seed year, or are burned to retard the brush and weed development.

Cutting in Young-growth Stands

Cutting in young-growth stands is taking place at a rapidly increasing pace; at present almost half of the cut in the region is coming from such stands. Most cutting is in the age class around 100 years and should actually constitute an intermediate harvest cutting. Some thinning for ties, pulpwood, mine props, and the like is taking place in stands all the way down to 35 years of age. Much of the cutting, particularly in the smaller holdings on private land, is in the nature of a liquidation: all merchantable material is taken out and the remaining stand is left in such condition that it is usually destroyed by windfall, insects, sunscald or fire, or a combination of these.

However, public agencies and the operators who are placing their lands under management have gradually worked out rules for improvement cuttings that leave a healthy reserve stand for future growth and harvest. Experience has shown that none of the standard silvicultural rules for improvement cutting or thinning are satisfactory for the natural young-growth Douglas-fir stands, particularly those in the age classes that are approaching maturity. Marking to leave the reserve stand in the best condition for future growth cuts directly across the established rules, such as thinning from the top, thinning from the bottom, or thinning from the sides. Cutting cannot be confined to any one or two crown classes. A four-step guide appears effective when taking out trees from a 6-inch minimum merchantable size up. It leaves the forest in the best growing condition and at the same time gives the operator a considerable portion of the highest value material in the stand:

1. Remove the rough, limby dominants that will relieve healthy trees of better form in the lower crown classes.
2. Remove all merchantable-size, low-vigor trees that may die before a next cut can be made (probably in 10 years).
3. Remove injured and defective trees of merchantable size.

4. Remove merchantable-size trees in any crown class where the stand is too dense and spacing can be improved.

The dominant trees included in the first class are usually growing at their maximum rate, and further release will not result in an increasing growth rate. They are probably the most valuable trees now, but they usually have heavy limbs; they will not self-prune and produce high quality material for several decades. On the other hand, the codominant trees that are being suppressed by the dominants usually have better form, clear boles, and will show an increased growth if given some release. At the same time, they are in all probability as good genetically as the dominants.

The trees in the second class will include the suppressed trees that are being crowded out of the stand. These for the most part are the scrub trees that naturally occur in any stand and should not be retained for the final crop trees or to produce the seed for future generations. The second group also includes trees infected with root rots. Within recent years pathologists have discovered that much of the natural opening up of our young-growth stands is the result of the root rots, *Poria weirii* and *Armalaria millia*. These can be detected in the stands during early stages of the rots; infected trees have a general appearance of low vigor; yellowish, thinned-out foliage, shorter needles, and shorter current year's growth. The root rots seem to spread from focal centers taking out one to a dozen trees before the infection appears to play out. The rot takes whatever tree happens to come in its path, regardless of crown class. Once there is definite evidence of infection, a tree seldom lasts more than a couple of years. These infections have been noted in stands from 10 years of age up to maturity, and often the roots are so weakened by the rot that the tree windfalls before it dies

The third group for cutting includes trees that have tops broken by ice storms, misshapen boles from other types of injury, logging damage, or evidence of decay in the trunk.

The marker selects trees from the fourth class if it is still necessary to take out more trees after the first three classes have been considered. This group includes merchantable trees in any crown class that can be cut to improve the spacing in the reserve stand. This cut gives the operator some leeway to take out trees that can be marketed best at the moment. Records of Douglas-fir in European plantations have shown that much less than our normal full stocking will produce maximum growth if trees are properly spaced.

Thinning in young-growth stands must be light and frequent; and, in general, a tree should not be released on more than one side at a time. In no case should a vigorous tree be taken out if it is on the edge of an opening or if it will make too large an opening in the stand. In most stands not more than 25 percent can be removed without danger of windfall loss and sunscald injury. Closer to the coast where the thin-barked, shallow-rooted spruce and hemlock constitute a higher percentage of the stand, the cut must be lighter. These rules can be applied only on the more gentle topography. In the more steep and rough country where a partial removal by machinery or horses cannot be made, it is recognized by all that clear cutting is the only alternative.

Cutting in Virgin Old-growth Stand

The virgin old-growth Douglas-fir forests were early recognized as a superior, subclimax, intolerant forest type. They followed the total or nearly complete removal of the old stand by insects, disease, windfall, fire or logging, or a combination of these. Douglas-fir was also recognized as a superior forest tree in comparison with its associates, except in the fogbelt along the Oregon and Washington coast where hemlock and spruce reign supreme, and in certain higher elevations where the noble and silver fir produce a superior forest. Early cutting, necessarily guided by economics rather than silviculture, swept everything in its path by logging, slash burning, and reburning in continuous operations until millions of acres were devastated. Seed stored in the duff, single seed trees, and remnants of stands were depended upon for restocking the cutovers though the efficacy of these measures was unknown. Little conscious effort was made to provide a seed source following logging. Nevertheless, a major portion of the cut-over land has restocked and now supports wonderful, even-aged young stands. With the advent of truck and tractor logging came a high-grading system of logging masquerading under the name of "selective logging." It proposed to do selective timber management, continuously taking out the largest and best material from the stands,

in spite of the well-recognized fact that we were dealing with an intolerant tree that would not reproduce in its own shade.

In a stand with a sound but unmarketable understory, an early partial cut has a place, but in the average overmature Douglas-fir stand each light successive cut only speeds up nature's process of conversion to a low grade climax forest of tolerant species or brush. Like the single "seed tree" and "continuous clear cutting" systems, this "selective" system of cutting is passing into the discard, but it has left many ugly scars in its wake in the form of degraded, logging-injured stands.

Knowledge gained from the recognition of past blunders and a wealth of fundamental silvicultural information gained from a half century of research and study have been woven into a new pattern by foresters. Out of it has come the proposal to log old-growth stands in small patches of 10 to 60 acres, separated by walls of green timber. The method is often referred to as "area selection" or "staggered settings." The system permits logging the most overmature or most marketable spots first. The separating walls of green timber provide an adequate seed supply to quickly reseed the cut-over areas. They also provide more complete fire control so that areas can be burned promptly after cutting if necessary—or left unburned and protected if there are seed or seedlings on the ground, and the slash hazard is not too great. Barring accidental fires, this system of cutting should result in rapid natural restocking of all future old-growth Douglas-fir cuttings and provide for future tree generations a wide distribution of age classes in each watershed or working circle.

A change in economic conditions may result in a backward trend, but at present, in both young- and old-growth Douglas-fir forests better silvicultural practice is well on its way.

Sphagnum Moss Retards Black Spruce Regeneration

That sphagnum moss may smother out a high proportion of young black spruce seedlings is illustrated by a study on a clear-cut black spruce swamp on the Superior National Forest, begun in the summer of 1947. Fifty staked seed spots were examined in July, August, and October 1947, and in July and September 1948. Although initial germination was quite high, stocking was cut in half during the first year as a result of smothering by the faster growing sphagnum moss. Growth of the surviving seedlings has been excellent despite the average density of nine per spot.

Loss from smothering by sphagnum probably could be reduced a little by sowing the black spruce seed earlier—in late fall or early spring—to produce larger seedlings by the time the moss begins active growth. However, to make seedings (natural or artificial) in clear-cut black spruce-sphagnum swamps uniformly successful, some practical means must be discovered for killing or retarding the growth of the sphagnum moss and other swamp vegetation. There are indications that some type of chemical spray may fill this need.

E. I. ROE,
Lake States Forest Experiment Station.

Aerial Photographs — An Efficient Tool in Management Plan Surveys

Grover A. Choate
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THE situation faced since the end of the war by the North Central Region of the U. S. Forest Service probably typifies that of many large timber managers, public and private. Management plans based on growing stock inventories taken during the 1920's and 1930's are hopelessly out of date, largely because of heavy wartime drain and changes in utilization. A new inventory survey is a prerequisite for revision of plans to meet present and probable future management requirements.

In addition to a timber inventory there is needed a basic survey, that can be supplemented as required, for such projects as land acquisition, timber sales, planting, recreation, and wildlife management, and others. Still a third requirement is that of revising the administrative base map to show accurately land lines, cultural features, and drainage. A survey therefore was needed which would provide management plan and base map data, and would serve as the basic survey for other uses and activities.

The intention of this article[1] is to outline in some detail the background and methods of a survey developed to meet these requirements. Although it is realized that applicability in other parts of the country and by different timber managers in the Lake States will be restricted, it is hoped that some features will be of value in fostering greater efficiency in forest surveys.

General Survey Plan

Developments during and immediately after the war in aerial photography and its application to forest mapping indicated new horizons in cruising efficiency. As compared with conventional ground cruises, increased efficiency through the use of photographs was seen as deriving from (*1*) the relatively high degree of accuracy of the map; (*2*) mapping in advance of plot work, thus permitting volume determination to statistical standards of accuracy varying with value, area, and stand composition of different timber types and condition classes; and (*3*) greatly reduced costs of both mapping and plot-taking.

In brief, the procedure as finally developed for gathering data consists of:

1. Obtaining new photographs.
2. Mapping on photos in the office.
3. Field checking of mapped photos for correction and additions.
4. Preparation of township maps from photos.
5. Computation of acreages.
6. Volume determinations.

Photographs

Some thought was given to the use of AAA photographs taken in 1938; however, the saving in cost was considered far from commensurate with the following advantages of new photographs: (*1*) picutres of present stand conditions, (*2*) utilization of war-time developments in aerial photography, and (*3*) choice of a more suitable scale.

Accordingly it was decided to photograph each forest prior to commencing the survey to the following specifications:

Type of photography—vertical.
Scale —1:15,840 (4 inches = 1 mile).
Film —Modified infra red with minus blue filter.
Focal length of lens—8¼ inches.
Type of prints —Contact prints on double weight semi-matte paper.

Mapping

Mapping specifications now classify forest lands much more minutely than was attempted in the past. One hundred and sixty-eight condition classes as defined by type, size class, and density are recognized for commercially important forest lands. The number of condition classes was increased, as compared with past practice, in order to secure greater homogeneity with respect to species and volume per acre, within each class. This reduction in variability within a class permits fewer sample plots to

[1]The author wishes to acknowledge the work of Albert W. Sump, assistant chief of timber management, U. S. Forest Service, Milwaukee, Wisconsin, who was largely responsible for preparing the procedures described.

secure a required accuracy of volume estimate. A further advantage of intensified classification is a more adequate description of the forest for general map purposes.

Through efforts of the Lake States Forest Experiment Station, a standard forest cover type classification scheme has been developed for the use of the forestry agencies in the Lake States. Commercially important forest lands are classified into 14 cover types, on the basis of species, or species groups, that generally can be recognized on aerial photographs. The four size-class groupings used are reproduction, poles, small sawtimber, and large sawtimber. Density, the third element of stand classification, is based on crown closure of dominant, co-dominant, and intermediate trees. The three classes recognized are: poor (10—40 percent crown closure); medium (41—70 percent crown closure); good (71 percent plus crown closure).

Contrasting conditions are mapped to a 2½-acre minimum, and noncontrasting to a 5-acre minimum. The following conditions are considered contrasting: (*1*) different cover types, (*2*) one size class to another at least two steps removed, and (*3*) one density class to another at least two steps removed.

Organization of the mapping job on a project basis for the region was determined by the specialized nature of the work, which involves a rather lengthy training period for photo-interpreters. With this type of organization the skill of trained photo-interpreters can be used from forest to forest as new surveys are begun. Local administrative personnel, although not used extensively on the mapping job, are given a training course in the fundamentals of interpretation and mapping. Such training has been found useful in the everyday use of photos for general administration, and also to develop an appreciation of the value of the survey.

Photographs when received from the flying contractor are turned over to the Division of Engineering which (*1*) inspects for conformance to contract standards, (*2*) circles with india ink principal and conjugate principal points, and (*3*) outlines area to be mapped on every other photograph. Generally, all lands within national forest boundaries are mapped. However, very large blocks that will definitely not enter into the timber management plan are deleted.

Actual mapping to the specifications outlined previously is carried out in the field offices in the following manner:

1. Type mapping is done stereoptically directly on photographs, using fountain pens and a red pigment ink that may be removed for corrections. The several interpretation aids found useful in training new men are the Harvard parallax wedge for heights, as a guide to size class; the crown density scale[2] as developed by Central States Forest Experiment Station; and stereograms of all types and size classes. Since all photos are checked in the field at the time section corners and land lines are located, tendencies to misinterpret certain features are quickly rectified, and this procedure builds up accuracy in interpretation without resort to measuring devices.

2. Cultural features such as roads, telephone lines, transmission lines, railroads, and others are symbolized in yellow pigment ink.

3. Drainage is indicated in blue ink.

Although at first considered a minor problem, considerable experimentation was ultimately necessary in arriving at a satisfactory type of ink. Of the many kinds tried, Weber's pigment ink best fulfilled the requirements of (*1*) sufficient brilliancy for legibility under multiscope, (*2*) easily erasable by moist cloth, and (*3*) usable in fountain pens.

Field Checking

Because of the general accessibility of timber lands in the Lake States, checking can usually be accomplished by automobile with very little walking. The locations of known corners, and the intersections of land lines with roads, are pricked on the photos and the descriptions noted on the back. Since a high degree of accuracy is desired this is done under stereoscope. A minimum of two locations is desired on each photo to ensure an adequate number and distribution of control points necessary for relating photographs to township plats. Where the latter are known to be inaccurate, as frequently is the case in townships that have not been resurveyed, field crews make special efforts to increase the number of corner locations.

Cultural and drainage features that could not be mapped in the office are added in the field.

Field correction of office type mapping is important. The amount of field checking necessary for this purpose varies with the extent to which

[2]Moessner, Karl E. A crown density scale for photo interpreters, JOUR. FORESTRY 45:434-436, 1947.

office mapping is found accurate. Under conditions that generally prevail in the Lake States, a check along roads is sufficient, and corrections for more remote areas are made on a comparative basis. Corrections are in most cases made on the ground. When, however, it is easier to postpone map changes for the office, notes are made as to the nature of the correction and location on the photo, using a coordinate grid overlay. Each interpreter, by checking his own photos within a few days of typing, secures the benefits of arresting erroneous trends quickly. Since, for example, height is such an important criterion in size-class interpretation, it follows that a knowledge of site is very important. Therefore, by keeping abreast of site conditions for the area in which he is working, the interpreter restricts his possibilities of error when he resumes office interpretation of adjoining photographs.

Map Preparation

The preparation of township maps from typed photographs is an engineering project and beyond the scope of this article. It may be noted briefly, however, that the procedure is first to establish a system of control points on the photographs. These points are then located on a prepared township projection using the method of radial line plotting. By coordinating control points on photos with those on the map projection the mapper can transfer photographic detail accurately under multiscope[3]. The relation between photographs and maps is permanently retained by indicating on the maps principal points, photo numbers, and flight strips. It is expected that this information will be useful for field work in referring from maps to photos and vice versa.

Revision of the administrative base map will be greatly facilitated by the preliminary work on township maps.

Computation of Acreages

Condition class areas, which are necessary under this survey scheme for determining number of plots, are taken from either mapped photos or township maps by the system of dot counts. If acreage determination can not be delayed until maps are available, a rough count, which is adequate for determining the number of plots, is made on the photographs for each working circle (generally a ranger district). Since this count is merely a step in plot allocation which is done on the basis of all land within the confines of the working circle, ownership is not important and no distinction of it is made. Later, when maps are available, an accurate area count is made by condition classes and ownership-groups within each working circle.

Area and volume determination for other than national forest lands, although of some use for local administrative purposes, is done principally to supply information for the nation-wide forest survey, being conducted under the direction of the experiment stations.

Volume Determination

Having a working circle mapped and acreages computed, one may begin determination of average condition class volumes. Intensity of sampling is determined independently for each condition class by the three variables: (*1*) accuracy of estimate desired, (*2*) area, and (*3*) variability of the timber.

The value per acre of the timber comprising the condition class must be considered in deciding on the accuracy of estimate desired. It is obviously desirable, for instance, to have a much more reliable estimate for well-stocked white pine sawtimber than for aspen saplings. Similarly, the greater the condition-class area, the larger the total values involved, and consequently the higher the desirable degree of accuracy of estimate. Fig. 1 represents graphically the relation of standards of accuracy to timber value and stand area, for the purpose of this survey.

Variability, the third determinant of intensity of cruise, is related to size, density, and uniformity of timber. Other factors being constant, an increase in size of timber denotes an increase in variability and consequently also in the intensity of cruise necessary to secure a given accuracy of estimate. Similarly as density decreases and distribution becomes patchy, more sample plots are necessary. These relations are expressed numerically by the stand factors in Table 1.

Average uniformity permits from 20—40 percent of the stand in patches of different size-classes or density than that judged to represent the stand as a whole. Stands with less than the

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[3]Spurr, Stephen H., and C. T. Brown, Jr. 1945. The multiscope: a simple stereoptic plotter. Photogram. Engineer. 11:171-178.

Spurr, Stephen H. 1946. Preparation of maps with the multiscope and related instruments. Harvard Forest. Petersham, Mass.

above variation are considered uniform and those with more variation patchy.

The number of plots required for each condition class is computed using the following formula[4]:

$$N = \frac{A\,(f)}{A\,(E)^2 + a\,(f)}$$

Legend
E = percent of accuracy expressed as a decimal.
A = total area to be sampled in acres.
N = number of sample plots.
a = area of the sample plot in acres.
f = stand factor.

[4]The formula and other statistical methods and data used in the survey are based on original work by S. R. Gevorkiantz of the Lake States Forest Experiment Station, St. Paul, Minn., and William A. Duerr, formerly of the Lake States and now of the Southern Forest Experiment Station, New Orleans, La.

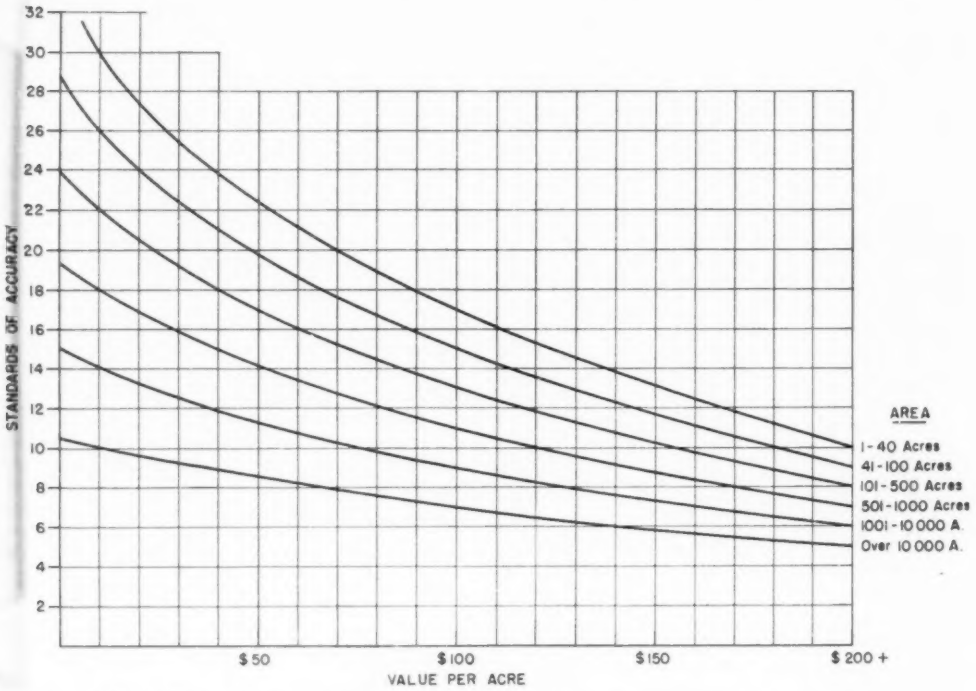

FIG. 1.—Standards of accuracy by values for cruising timber for management plan purposes.

Table 1.—Stand Factor—(f)
(4 x Coef. Variation Squared)

Size Class	Good Density		Medium Density			Poor Density		
	Uniform	Average	Uniform	Average	Patchy	Uniform	Average	Patchy
Large Sawtimber	.6	1.0	1.3	2.0	4.0	3.0	4.0	8.0
Small Sawtimber	.2	.2	.4	.8	2.0	1.3	2.0	4.0
Poles	.2	.2	.4	.6	1.3	1.3	2.0	4.0
Restocking	.1	.1	.2	.4	1.0	.3	.5	2.0

Example: A medium stocked stand of hardwood small sawtimber of 150 acres is to be sampled. This stand is of average uniformity and should yield about 5 M board feet per acre valued at $15 per M, or $75 per acre. Reading from Fig. 1, we find that a standard of accuracy of 15 percent is required. The stand factor as found in Table 1 is 0.8. The number of 1/5-acre random sample plots needed to secure this standard of accuracy is computed from the formula.

$$\text{Number of plots} = \frac{150 \times 0.8}{150 \times .15^2 + 0.2 \times 0.8} = 34 \text{ plots.}$$

As used in this survey, the standard of accuracy is the limit of accuracy equal to twice the standard error of sampling. Therefore, the chance from a statistical standpoint is that 95 percent of the time the estimate will be within the limit established. It also indicates 2 chances out of 3 of staying within one-half the limit of error.

In considering the reliability of the estimate, one must keep in mind that the standards of accuracy apply only to the total area of all blocks and to the total volume of all species comprising the condition class. An equally accurate estimate applicable to certain components of the condition class, whether a subdivision in area or an individual species, would require a much more costly cruise.[5]

Having calculated for each condition class the number of plots needed, we next determine their location. By dividing the area of a condition class by the number of plots to be taken, we get the acres represented by each plot. A table is thus prepared showing *acres per plot* for all condition classes. Using this table and keeping cumulative records, we apportion plots throughout the working circle on the basis of rough estimates of condition class areas within each township, or even each photograph.

Courses of travel are laid out on either the photos or maps in such manner that plots can be taken in the various timber types as required. Location of plots along the course of travel within a condition class is determined by the use of random number tables. The desire for a wide distribution of plots to ensure representation of sites and other within-class variations must be weighed against cost of travel. In view of this conflict, there is room for much ingenuity in laying out plots and courses.

Two-man field crews are used in plot-taking. Since courses are generally widely separated, travel between courses is by automobile. At each location one-fiftieth-acre is counted for reproduction, and a 1/5-acre plot tallied for merchantable sizes. The following data is secured on the latter: (*1*) tally of merchantable timber by species, diameter, and merchantable heights; (*2*) cull percent; (*3*) estimate of site; (*4*) cut recommendations; and (*5*) sample tree measurements for growth estimates.

Accomplishments

Since the summer of 1947 when the survey was begun, about 3½ million acres have been mapped and roughly half that area sampled for volumes. Because trained photo-interpreters were not available at the beginning, but have been developed only in the course of the work, it is believed that costs to date are the maximum that may be expected in the future. Average accomplishments so far are as follows:

1. For the combined jobs of map typing and field checking—2,000 acres per man-day, of which the latter comprises 43 percent.
2. Volume determination, including rough area count, plot allocation, plot taking, and tally sheet computations—1850 acres per man-day.

Future Plans

Rather than attempt prolonged maintenance of the inventory of growing stock by bookkeeping methods, new photographs and resurveys are planned at intervals of ten to fifteen years. Future growth data, which at the present time are secured in conjunction with timber inventory, will probably be obtained from permanent sample plots. Since much of the data collected at the present time are of lasting value, future surveys are expected to be less costly. Correction of township plats and base maps will be minor. Present maps will greatly facilitate future type identification with due allowance for growth, fires, cutting, and planting.

[5] A discussion of the application of the statistical work of Gevorkiantz and Duerr (see footnote 4), to small tracts is provided in a paper by William W. Barton and C. B. Stott. Simplified guide to intensity of cruise. JOUR. FORESTRY 44:750-754. 1946.

Use of "Ammate" for Poisoning Ponderosa Pine in Stand Improvement

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ONE OF the stand improvement problems in the ponderosa pine type of the Southwest is the elimination of poorly formed or diseased stems in pole and small saw-timber stands. Such trees may of course be cut and the cost of felling is low for trees under 10 inches d.b.h. In order to forestall fire and bark beetle hazards, however, the down tree usually must be limbed, at least partially peeled, and the brush disposed of—a laborious and expensive operation.

Sodium Arsenite Previously Tested

Since 1934 sodium arsenite has been used effectively for killing undesirable pines in experimental and demonstrational work on the Fort Valley Experimental Forest. In this method a solution of sodium arsenite is introduced into holes bored into the bole of the tree near the base.

This proved to be a highly effective and fairly inexpensive method for the disposal of inferior trees. It also demonstrated a number of advantages over felling. Bark beetles (Ips), although attracted to poisoned trees, did not build their numbers up to the point where surrounding green trees were damaged. The dead standing trees helped to protect adjacent slender saplings and poles from snow bend and breakage during their period of adjustment to release. In addition, poisoned trees were found to deteriorate rapidly and in most cases fall (after 5 to 10 years) without seriously damaging neighboring saplings or poles.

Foresters have been reluctant to use the sodium arsenite method, however, because the chemical is extremely poisonous to humans, livestock, and wildlife. The greatest care must be exercised both in handling and applying sodium arsenite solution.

"Ammate" Tested in 1948

During the 1948 field season a second chemical —ammonium sulfamate (trade name "ammate") —was tested on a small scale at Fort Valley. Ammate had proved effective in the South for killing blackjack oak on upland longleaf pine lands. In contrast to sodium arsenite, this poison is non-toxic to humans, livestock, and wildlife—a distinct advantage in stand improvement work.

Ninety limby ponderosa pine poles, 30 to 35 years old and 4 to 8 inches in diameter, were used in the test. The trees were divided into three groups of 30 each. Two sets were treated with ammate (two methods of application); the third set was treated with sodium arsenite to serve as a check. Ten trees of each set were poisoned in May and the treatments were repeated in July and again in October to provide a measure of seasonable variation.

The treatments employed were as follows:

1. *Ammate crystals.*—Dry ammate crystals were placed in notches cut with an ax into the stem of the tree. Notches were cut 12 to 18 inches above the ground and spaced to leave about 6 inches of unsevered bark between cuts. One tablespoon of ammate crystals was placed in each cup immediately following notching.

2. *Ammate solution.*—A concentrated solution (10 pounds ammate per gallon of water) was applied to holes drilled into the stem. Holes 5/8-inch in diameter were drilled tangentially and downward to a depth of 4 to 5 inches and spaced about 6 inches apart around the stem, at a height of 12 to 18 inches above the ground. Each hole was filled once with ammate solution.

TABLE 1.—CONDITION (IN MAY 1949) OF PONDEROSA PINE POLES POISONED WITH AMMATE AND SODIUM ARSENITE DURING MAY, JULY, AND OCTOBER 1948.

Treatment	Number of trees treated	Number of trees: 50 percent or more of crown killed	Number of trees: Complete kill
	May Series		
Ammate crystals	10	10	6
Ammate solution	10	10	6
Sodium arsenite	10	10	6
	July Series		
Ammate crystals	10	10	6
Ammate solution	10	10	9
Sodium arsenite	10	10	6
	October Series		
Ammate crystals	10	8	0
Ammate solution	10	10	8
Sodium arsenite	10	10	1
	All seasons		
Ammate crystals	30	28	12
Ammate solution	30	30	23
Sodium arsenite	30	30	13

3. *Sodium arsenite solution.*—A 15-percent solution was applied to holes drilled into the stem. Holes were the same size and drilled in the same manner as for the ammate solution method but were spaced about 8 inches apart around the stem. Each hole was filled once with the sodium arsenite solution.

The relative effect of the three treatments is summarized in Table 1. It is evident that ammate in either the crystal or solution form can be successfully used to kill ponderosa pine. The record further shows that ammate is about as effective a tree killer as sodium arsenite.

Table 2, which gives the condition of poisoned trees 5 weeks after treatment, provides a measure of the rate of kill at different seasons of the year. Previous work with sodium arsenite showed that the rate of kill is greatly influenced by the time of year of application. Table 2 indicates a similar relationship for the ammate treatment.

Trees were killed more rapidly in all cases when poisoned during the growing season in May and July than when treated in October after active growth had ceased. Ammate crystals are evidently slower in reacting than the chemical solutions. This delay might be attributed to the fact that the crystals had to dissolve to be absorbed by the tree. However, the cumulative effect of the crystals over a period of from 6 to 8 months is comparable to that of the sodium arsenite solution (Table 1).

Ammate Crystals Show Promise

While the highest rate of kill was obtained with the ammate in solution, the use of ammate in crystal form offers several practical advantages: (1) Making notches with an ax is much simpler and faster than drilling holes, (2) dry ammate crystals are lighter and easier to handle than the liquid solution, and (3) stand improvement crews can readily use the crystal treatment for improvement removals without being burdened with special poisoning equipment.

Only three items are needed: (1) a sharp ax; (2) a container for ammate crystals (such as a 2- or 3-pound coffee can with wire handle); and (3) a tablespoon or equivalent measure for applying the chemical.

Tentatively, a crystal treatment in which the notches are spaced so that not more than 4 inches of unsevered bark is left between ax cuts is recommended for use in stand improvement. This is a heavier treatment than was used in the 1948 trials and should provide a fairly satisfactory rate of kill.

Cost of Ammate

Ammate is available at many feed and fertilizer stores, and costs about 18½ cents per pound in 50-pound lots, or about 16 cents per pound in 350-pound drums.

Since a tablespoon of ammate costs about one-half cent, the chemical needed to kill a pole size ponderosa pine will cost from 1 to 3 cents per tree.

Further Tests Needed

Several of the trees treated with ammate were attacked by bark beetles (Dendroctonus) but in no greater intensity than those treated with the sodium arsenite solution. Additional work is needed to determine the extent of beetle (Ips and Dendroctonus) infestation following ammate treatment and to determine the degree of treatment needed to kill trees of various diameters and crown sizes.

TABLE 2.—CONDITION OF POISONED PONDEROSA PINES 5 WEEKS AFTER THE POISON WAS APPLIED

Treatment	Number of trees treated	Number of trees: 50 percent or more of crown killed	Number of trees: Complete kill
		May Series	
Ammate crystals	10	3	0
Ammate solution	10	9	2
Sodium arsenite	10	8	1
	30	20	3
		July Series	
Ammate crystals	10	9	0
Ammate solution	10	10	4
Sodium arsenite	10	10	0
	30	29	4
		October Series	
Ammate crystals	10	0	0
Ammate solution	10	1	0
Sodium arsenite	10	2	0
	30	3	0

Further Results on Loblolly Pine Seed Production and Dispersal

K. B. Pomeroy and C. F. Korstian[1]

Silviculturist, Southeastern Forest Experiment Station, Asheville, N. C., and dean, Duke School of Forestry, Durham, N. C., respectively.

A STUDY of seed production and dispersal by a mature, fully stocked, loblolly pine stand has been in progress in the Duke Forest at Durham, N. C., since 1936.[2] The first eight years of observations[3] have been reported on. They disclosed that:

1. Two good, three medium, and three poor seed crops occurred.

2. The number of seeds trapped decreased as distance from seed source increased.

3. Viability of seed varied from 29 to 57 percent according to size of seed crop. Highest viability occurred in years of abundant seed production.

4. Viability also varied with time of seed dispersal, and the highest percentage coincided with peak seedfall.

5. Seedfall began about October 20, peaked early in November, and was 84 percent complete by the end of December.

6. Warm, dry windy periods increased release of seed; cool, moist periods retarded it.

7. One good seed year provided enough seeds to stock a cutover area with 1,000 or more seedlings per acre.

8. Alternate strips, 150 to 200 feet wide, at right angles to the prevailing wind direction, could be safely clear cut if bordered by well-stocked, seed-producing stands.

The above conclusions enabled silviculturists to prepare better plans for forest management, but failed to supply information on three important questions:

1. When will the next good seed crop occur?

2. If harvest cutting is by a shelterwood system instead of strip cutting, how many seeds may be obtained annually from the residual stand?

3. How would seeds be distributed in a strip cleared to a greater width than 264 feet?

These questions have been partially answered by continuing the study on a modified basis from 1944 to 1948. In addition, most of the earlier observations have been confirmed and some new information has become available.

Review of Experiment

The experiment was begun by MacKinney and Korstian in 1936, and since then has been carried on jointly by the Southeastern Forest Experiment Station and the Duke Forest staff. During the first 4-year period, seedfall was recorded in and near a 132-foot wide, cleared strip between two uniform, fully stocked, 70-year-old stands of old-field loblolly pine. In 1940 the clearing was widened to 264 feet. In 1944 the cleared strip was enlarged to 396 feet by removing the fully stocked stand to windward, so that a shelterwood cutting made in 1942 could be sampled. This shelterwood, containing about one-fifth the volume of the original stand, was composed of the most fruitful and fastest growing loblolly pines plus a few good yellow-poplars and white oaks.

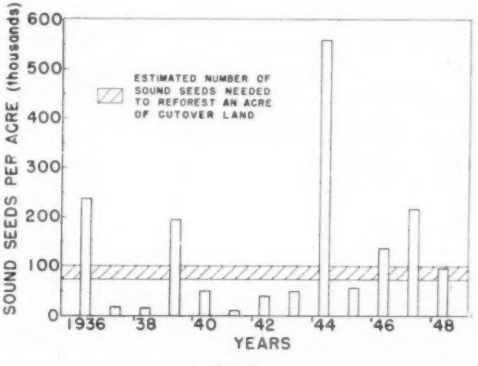

FIG. 1

[1]The writers gratefully acknowledge the assistance of A. L. MacKinney, L. E. Chaiken, A. A. Downs, G. M. Jemison, and Helen B. Burgess of the Southeastern Station, and Norbert B. Goebel, Robert C. Heller, Joseph L. Conrad, Jr., Leo F. Labyak, Gene L. Butcher, and Arthur W. Ordel, Jr., of the Duke Forest Staff.

[2]Mackinney, A. L. and C. F. Korstian. Loblolly pine seed dispersal. Jour. Forestry 36:465-468. 1938.

[3]Jemison, George M. and C. F. Korstian. Loblolly pine seed production and dispersal. Jour. Forestry 42: 734-741. 1944.

Seed Production, 1944 to 1948

The number of sound seeds produced annually by an acre of forested land is shown in Figure 1. The average number trapped in the shelterwood during the past 5 years is double the average catch in the full stand from 1936 to 1939, and five times greater than the average from 1940 to 1943. Most of this difference is attributed to the occurrence of more good seed years in the 1944-1948 period. Observations elsewhere in North Carolina and Virginia support this belief. Some of the difference in productivity is thought to result from the change in stand conditions following the complete release of residual trees in a shelterwood cutting. The size of the 1944 seed crop (three growing seasons after release of seed trees in a shelterwood cutting) when compared to crops in other good years, indicates that the seed-bearing trees were stimulated. Since pine cones do not mature until the second year, it appears that stimulation must have occurred during the first growing season following release. This prompt surge in seed production has been observed before by Trousdell[4] in the Bigwoods Experimental Forest.[5] Total seedfall and percentage of viable seeds from 1944 to 1948 are shown in Table 1.

The distribution of sound seeds into a cleared strip is indicated in Figure 2. The number of seeds trapped decreased as distance from the seed source increased, and prevailing winds determined the direction in which most of the seeds were distributed. Table 2 lists the percentage of the total catch at different distances from the edge of the timber, and the viability of seeds trapped at those distances. Figure 2 and Table 2 together indicate that 200 feet is the maximum safe width for cleared strips and that strips should be cut at right angles to prevailing winds.

TABLE 1.—NUMBER OF LOBLOLLY PINE SEEDS DISTRIBUTED PER ACRE, 1944 TO 1949, AND THEIR VIABILITY

Year	Total number seeds per acre of cleared strip	Average percent viability	Number viable seeds per acre of cleared strip
1944-1945	241,900	77.5	187,472
1945-1946	48,200	45.0	21,690
1946-1947	98,200	60.4	59,313
1947-1948	151,600	67.8	102,783
1948-1949	63,300	45.4	28,738
Average	120,640	66.3	79,999

Viability of Seed

From 1944 to 1948 the percentage of viable seed varied directly with total seed production. As noted in earlier years, when annual production was high, viability was high, and vice versa.

[4]Unpublished data.

[5]Maintained by the Southeastern Forest Experiment Station in cooperation with Camp Manufacturing Company, Inc., Franklin, Va.

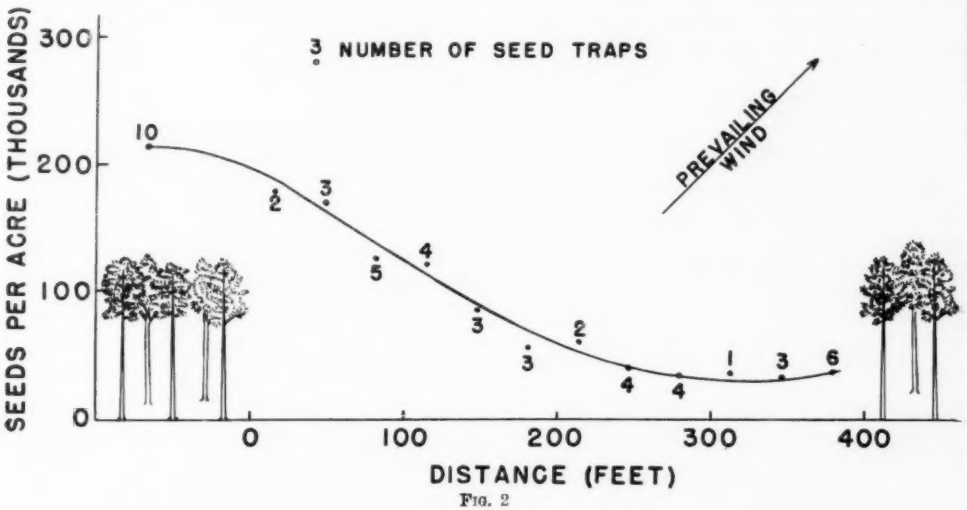

FIG. 2

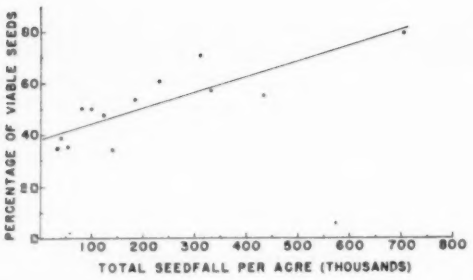

FIG. 3

This relationship is shown in Figure 3.

There was a slight decrease in the percentage of viable seeds as distance from source of seed increased (last column in Table 2). This relationship was not observed during the first 8 years of study.

Seasonal Distribution of Seedfall

The trend of seasonal distribution of seedfall during the past 5 years conformed to the 1936-1943 pattern. The first seeds were dispersed about October 20, peak fall occurred early in November, and 89 percent of the crop was disseminated before January 1.

This consistent pattern of seasonal distribution indicates that woodland managers desiring to obtain best results from available seed should complete seedbed treatments (if any are contemplated) prior to October 20, and should defer harvest cutting until January or later. Logging should be completed before seeds begin to germinate. Germination may occur during any period of favorable weather in March or April.

Silvicultural Application

During the 13-year period, each of the five good seed crops contained enough viable seeds to produce 1,000 or more seedlings per acre of cleared strips. But germination alone does not insure stand establishment. In all cases, seedlings did not survive in acceptable numbers unless improvement measures, such as cleanings or other hardwood controls, were applied.

TABLE 2.—DISTRIBUTION OF SEEDFALL AT DIFFERENT DISTANCES FROM EDGE OF TIMBER AND PERCENTAGE OF VIABILITY

Distance downwind from timber (feet)	Seeds per acre per year	Percentage of total catch	Percentage of seeds viable
396-298	57,920	7.3	62
297-199	65,600	8.3	64
198-100	138,320	17.5	66
99-0	220,720	27.9	68
0	308,560	39.0	69

This result has been observed on other good sites within the Duke Forest. Environmental conditions on these sites are believed to be similar to or somewhat better than average Piedmont Plateau conditions, but may be more severe than in some portions of the Coastal Plain of Virginia and North Carolina.

Summary

Records of loblolly pine seed production and dispersal from 1944 to 1948 confirm previous observations made from 1936 to 1943. The following additional information has become available.

1. A shelterwood, in which only the most fruitful trees of the original stand remained, provided enough viable seeds for stand regeneration within 5 years of the date of cutting (1942).

2. Prevailing winds influenced the direction and distribution of seeds. Few sound seeds are carried downwind more than 300 feet, and very few seeds are deposited in the opposite direction at distances greater than 75 to 100 feet.

3. Viability decreases slightly as distance from seed source increases, since light, infertile seeds may be wind-borne for greater distances than sound seeds.

4. Good seed crops will supply enough viable seeds to insure germination of at least 1,000 seedlings per acre. But seedling establishment of loblolly pine under conditions such as exist on all but the poorer sites in the Duke Forest cannot be assured unless competing shrubs and trees are removed by cleanings or other hardwood control measures.

Reforestation in Japan

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JAPAN, with more than 80,000,000 inhabitants, is about the size of Montana. Her people are more than ever before dependent upon the wood, in one form or another, that is cut from the forested two-thirds of the country. Firewood and charcoal are their chief heating and cooking fuels. Two-thirds of all wood cut is for fuel. Nearly all houses are of wood construction, and the task remains of providing homes for six million repatriates and replacing over two million destroyed by war. Railroad lines cannot be maintained without wooden ties, and mines require wooden mine props to operate. Paper made from wood fiber probably has more uses than in any other country. Native furniture is made of wood or bamboo. None of these uses is adequately supplied. Because Japan's need for wood in all forms is so desperate, all areas capable of supporting forest growth, but incapable of serving any higher use (such as food production), must be devoted to forest products.

Japan's rugged topography, unstable soils, extensive coastlines, and heavy precipitation create serious erosion and sand fixation problems. Torrential rainfalls and snowslides carry soil and debris from denuded slopes and deposit them in the stream beds and on cultivated valley floors. Wave and wind actions along stretches of barren coast form sand dunes which march relentlessly inland. Field crops are subject to excessive wind damage in many portions of Japan if not protected by windbreaks.

Reforestation Practices

Natural reforestation in Japan, particularly in timber stands,[1] often is aided by clearing away debris, scarifying the soil, thinning overdense reproduction, or cutting excess sprouts. When nature has failed to provide a complete stocking, it is common practice to do supplementary planting. These activities are known as "aid to natural reforestation." Often several years pass before natural reforestation has reached a satisfactory degree so that the Japanese record it as such.

Most natural reforestation occurs in broadleaved stands, most of which are managed under the "coppice" system, primarily to produce fuelwood. Not until trees have been cut five or more times, during a hundred-year period, do the stumps lose their vigor and have to be artificially replaced. Natural reforestation of conifers increased until 1944,[2] the result of the upward trend of selection cutting in coniferous stands.

Artificial reforestation is largely with coniferous species, the most important in Naichi[3] being Japanese cedar or redwood (Sugi, *Cryptomeria japonica*), Japanese cypress or cedar (Hinoki, *Chamaecyparis obtusa*), Japanese red pine (Akamatsu, *Pinus densiflora*), Japanese black pine (Kuromatsu, *Pinus thunbergii*), and Japanese larch (Karamatsu, *Larix kaempferi*). Japanese cedar or redwood and Japanese cypress or cedar, the two species most extensively used, cannot be depended upon to reproduce satisfactorily by natural means, because they are unable to withstand severe competition while young and have low germination rates, and because most privately owned stands are cut before they reach their prime seed production age.

In Hokkaido,[4] the principal conifers planted are white fir (Todomatsu, *Abies mayriana*), Japanese larch, Yezo spruce (Ezomatsu, *Picea jezoensis*), and European spruce (*Picea excelsa*). Ash (Yachidamo, *Fraxinus mandschurica* var. *japonica*) and Japanese chestnut (Kuri, *Castanea crenata*), are the most common broadleaved species planted in Hokkaido. For the rest of Japan, red oak (Kunugi, *Quercus acutissima*), and to a lesser extent, Japanese chestnut and Camphor tree (Kusu, *Cinnamomum camphora*) predominate.

A mixture of species is rarely used in artificial reforestation, although several species may be block planted on the same slope. Common practice in Naichi is to plant Japanese cedar on the best sites, the valley or lower slope; Japanese cypress on the middle or upper slope; and Japa-

[1]Stands whose chief products are logs, pulpwood, poles, piling, mine props, crossties, etc., rather than fuelwood and minor forest products.

[2]Japanese fiscal years (1 April to 31 March) are used throughout this article.

[3]Three of the four main islands of Japan—Honshu, Shikoku, and Kyushu.

[4]The most northern and fourth main island.

nese red pine on the ridge top or upper slope. In such a forest the cedar and cypress are managed by cleareutting or group selection followed by planting, while the pine generally is selectively cut and dependence placed on natural seeding.

Spring planting is customary although in northern and central Japan fall planting is common where heavy snowfall occurs. Usually, areas that require artificial reforestation are planted from one to three years following cutting. Since 1941 food crops often have replaced trees for several years after cutting and before tree planting was attempted, particularly on private forests. This practice has led, in some areas, to attempts by tenant farmers to wrest from the forest owners land which, on a long-range basis, is best suited to forestry. Crops intermingled with a young plantation also is not an uncommon sight.

Conifers usually are planted at the rate of 1,225 to 1,835 per acre, although in the Yoshino district of Nara Prefecture,[5] where early thinning is customary to supply rural areas with long, slender poles for rice drying racks, as many as 3,265 Japanese cedar are planted. Chestnut is planted at the rate of 610 per acre, because a branchy, nut-producing tree is desired. For most other broadleaves, 815 to 1,020 per acre are used.

Site preparation usually consists of clearing away grass, weeds, and debris from planting spots and often from entire hillsides. On sites covered with bamboo grass (*Sasa* spp.), parallel strips 1½ meters wide are cleared. In areas of heavy snowfall, north slopes over 30 degrees must be terraced to prevent avalanches from sweeping plantations away. Fertilizer is rarely used in field planting. After-care, in the form of cutting weed, vine, and grass competition from around the trees, usually continues from two to fifteen years after planting. Seedlings are tied or propped erect before snowfall, or straightened after the snow has melted, in areas of heavy snowfall as late as the tenth year. Mortality at the end of the first year is about twenty percent in Japanese cedar and cypress, and five percent in pine. Fail spots are then replanted, but losses in later years, unless covering considerable area, are not made up.

[5]The prefectures, the major political subdivisions of the country, are comparable to the states in the United States of America.

Direct seeding is not common. It has been practiced however, on national forests[6] in southern Japan since 1916 with red pine. About five seeds are sown in a spot or hole, and covered with rice hulls or a sprinkling of soil. A plant percentage of 70 is usually attained by the end of one year.

Planting of Japanese cedar rooted cuttings (1-0 and 1-1) is practiced. False arborvitae (Hiba, *Thujopsis dolabrata*) and Japanese cypress rooted cuttings have been used to a limited extent in recent years. This practice is at least two hundred years old in some areas. It is being used more extensively currently because of the increasing seedling requirements.

Nurseries

Seedling production of nurseries since 1932 has never fallen much below a half billion a year. Private nurseries have accounted for the bulk of production; and cedar, cypress, pine, and larch are the main species grown (Fig. 1). Japanese larch has been finding more favor in recent years because of its rapid growth. White fir and Yezo spruce are the principal species produced in Hokkaido. Red oak is by far the most extensively produced broadleaved tree in Japanese nurseries.

National forests' reforestation and nursery activities are decentralized through 14 forest regions. Each establishes and maintains sufficient nurseries to provide for its own national forest needs, and for part of the stock needed to fulfill its contracts to reforest community lands.

In February 1948, about 24,000 nurseries with a bed area of 15,000 acres, well-distributed throughout Japan, were reported. National forests operated 1,500 of these nurseries having a bed area of 5,000 acres, nearly half of which was reported as growing food crops the previous year. Of the remaining nurseries, 17,400 are owned by farmers, 3,750 by forest owner associations or cooperatives, 700 by prefectures, 300 by schools, 200 by companies, and 50 by communities.

Most nurseries are extremely small by American standards, ranging in size from 8 acres down to 100 square yards. Those operated by

[6]National forests are managed by the Forestry Agency (formerly known as the Bureau of Forestry) of the Ministry of Agriculture and Forestry, the counterpart of the Forest Service of the U. S. Department of Agriculture.

farmers average one-tenth of an acre and are always intermingled with rice paddies and other food and fiber crops. Most small nurseries are operated as a sideline to foodstuff production, and many operators purchase seedlings from national, prefectural, and large nurseries and raise them for an additional year or two. It is not uncommon for farmers to collect forest wildlings in spring and plant them between the rows of winter wheat (Fig. 2). In extensive planting areas transplant beds may be established in or adjacent to the planting site for the final growing season.

Planting stock, by American standards, is large. One-year-old coniferous seedlings are seldom field-planted except on some national forests where pine has been used. Usually 1-1 stock of this species is planted (medium sized stock is about 7 inches from root collar to top). Japanese cedar used is usually 1-1 (12 inches) or 1-1-1 (14 inches), and cypress 1-1-1 (14 inches). Broadleaved stock is usually 1-1 (21 to 35 inches) although 1-0 stock is sometimes used.

Hand work prevails in practically all nurseries. Fertilizers are generally used in the seedbeds, but scarcity of fertilizers during the war and for about three years following the surrender precluded their extensive use in transplant beds, with the result that the seedlings had to remain in transplant beds an additional year. Principal fertilizers are ammonium sulphate, superphosphate, potassium sulphate, wood, straw and plant ashes, wheat, rice, and barley straws, forest litter, night soil, rice bran, fish, bone, rape seed and soybean meals. Soybean and yellow lupine are used for soiling crops. Daikon, a giant white radish sometimes weighing as much as 12 pounds, and sweet potatoes often are spoken of as soiling crops by the Japanese, but in reality their purpose is to provide food for nursery workers. Mortality in seedbeeds is sometimes great because of sun scald, drought, insects, and disease. Straw mats are used for shade (Fig. 3); irrigation is common, although overhead sprinkling systems are absent, and insecticides and fungicides are being used more extensively as they become available.

General Situation

Beginning with the China Incident in 1937, Japan's need for forest products increased greatly, and the rate of cutting mounted. For the first five years of this period, while the nation was confident of victory, conditions made it practical to keep reforestation nearly abreast of cutting. As the war progressed, shortages in material and manpower developed. Overcutting increased, reforestation lagged. Beginning in 1942, cutting occurred on more than 1,700,000 acres each year, and in 1946 reached 2,100,000 acres, most of which was clearcut. In 1943, reforestation dropped to 1,250,000 acres, and in 1944 to a million acres. In each of these years half of the reforestation was by artificial means. Since 1944 reforestation has continued at the 1944 rate, and the proportion of artificial re-

FIG. 1.—Transplanting Japanese cedar seedlings by women laborers in a national forest nursery in central Japan. Rice straw ropes line out the beds and a notched board maintains the spacing.

FIG. 2.—Farmers in central Japan obtain intense utilization of their land. Between rows of winter wheat they transplant Japanese cedar wildlings gathered from the forest.

FIG. 3.—Woven straw mats supported on wired posts provide shade for Japanese cedar seedlings at a national forest nursery in northern Japan. Sweet potatoes to feed nursery workers grow nearby.

forestation has varied between 30 and 45 percent.

The Forestry Agency estimated that, as of April 1947, 65 percent of the area in need of reforestation was of species that primarily produced timber. As of April 1948 it estimated that more than 4,355,000 acres would have to be artificially planted or seeded (including more than 830,000 acres of forest and sand dunes needing damage-repair and damage-prevention work), or would have to receive aid to natural regeneration. This estimate was made after excluding 2,545,000 acres that will reforest naturally (mostly by coppicing), poor though the stocking will be on about 1,500,000 acres. Data for 1948 indicate that the balance, or rather the lack of balance, between cutting and reforestation has continued, with the result that 7,500,000 acres (including poorly stocked areas) now require reforestation.

Private Forest Situation and Plans

Considering the economic situation and conditions affecting the forests in private ownership[7] (two-thirds of the total forest area), it is not surprising that they contain the bulk of the reforestation problem. With the exception of a few well-managed forests operated on a sustained-yield basis, exploitation during the past several years has been rapid, and clearcutting has been the rule. As much of this cutting was not followed by planting, denudation has increased greatly. The privately owned area in need of artificial reforestation in April 1948 was 3,650,000 acres (including 740,000 acres of devastated forest and sand dune areas). Economic conditions and insufficient appropriations with which to pay planting subsidies have forced downward revisions of all reforestation plans advanced by the Forestry Agency for private forests since 1945. In 1946 and 1947 achievement was 20 and 30 percent respectively of original goals.

The Forestry Agency in October 1947 advanced a five-year plan with several phases for the reforestation of 5,100,000 acres of private land. This included 70,000 acres of government planting on community forests and 570,000 acres of planting and engineering works on areas in a devastated or eroding condition. It is adequate for needs as of April 1948 and for about half of the area likely to be cut during the five years. If the entire plan is fulfilled about 1,450,000 acres would remain to be reforested. Funds were provided for subsidizing the reforesting of all but 275,000 acres of the 750,000 acres called for during the first year (1948) of the main phase of the plan. In spite of reduced funds, it appears that the Japanese are going to accomplish a higher percentage of their original goal than in any previous year of the occupation.

National Forest Situation and Plans

Even the national forests felt the effect of Japan's "total war" course, as cutting climbed steadily to 685,000 acres in 1943. However, two-thirds of this was selection cutting. Reforestation continued on an even level (225,000 acres) until 1944, when it declined slightly.

On what were then the imperial forests[8] cutting followed the same upward trend as on other forest land beginning in the late 1930's and reached a peak of 109,000 acres in 1944. Practically all this was selection cutting, however, so that the reforestation problem on these forests is not serious. About 210,000 acres were in need of reforestation at the time of the consolidation with the national forests in 1947.

[7] Including community, prefectural, shrine, temple, and school forests.

[8] These forests, which totaled 3,200,000 acres, were the property of the Emperor and were administered by the Imperial Forests and Estates Bureau of the Imperial Household Ministry until April 1947, when they were added to the national forests.

Prior to April 1947, the national forests in Hokkaido were not under the jurisdiction of the Forestry Agency of the Ministry of Agriculture and Forestry. Instead, the Hokkaido Prefectural Forest Service managed them, in conjunction with their own extensive prefectural forests, for the Ministry of Home Affairs.

As 1947 was the first year in which the national forests in Hokkaido and the imperial forests were to be administered as part of the national forest system, the Forestry Agency combined the 1947 phases of the existing plans for these forests with its own plan. Following a 60 percent reduction of the 1947 phases of the combined plans in September 1947, 96 percent of the revised plan was finally achieved.

The Forestry Agency, in October 1947, formulated a new five-year reforestation plan in view of economic conditions, the absorption of the national forests of Hokkaido and the imperial forests into its administrative system, and a survey of reforestation needs. (Following a resurvey, 700,000 acres of national forests were reported to be in need of artificial reforestation as of April 1948.) On the basis of the latest survey, the plan provides for reforesting all the areas currently in need of reforestation (except the poorly stocked area) and the area that will be cut during the program. Funds were appropriated by the Japanese Diet to carry out 80 percent of the first year (1948) of the main phase of the plan. However at the end of the third quarter of the fiscal year, 76 percent of the 1948 program was reported as complete, and the prospects of full completion were excellent.

Erosion Situation and Plans

Since 1911, a separate program involving reforestation, sand dune fixation, and engineering construction (terracing, check dams, retaining walls, etc.) has been in effect on areas that have been or should be declared "protection forests." This program has been applied more extensively to areas in private ownership, mainly because they need it most, rather than to those owned by the national government. In 1947 private and national forest completed 34 and 78 percent respectively of revised budget plans, but only 14 and 17 percent respectively of the original plans.

The 1948 survey of protection forest needs indicated that 640,000 acres of forest land were in such poor condition that extensive engineering works were needed in addition to artificial reforestation; 90,000 acres of non-forest land required these practices to prevent damage; and 100,000 acres of coastal sand dunes required fixation. The Forestry Agency in its five-year plan outlined a governmental subsidy and work phase to provide for all the non-forest land and for a fifth of the damaged-forest and sand dune areas.

Inadequate appropriations hampered completion of 1948 scheduled work and are likely to do the same in 1949.

Meeting Problems of Reforestation

The fulfillment of plans is dependent in part upon the availability of sufficient seeds and seedlings. Both 1946 and 1947 were poor seed years and programs suffered accordingly. Seed collections in 1948 increased so that the supply available for the 1949 spring sowing was very favorable.

The planting stock supply is improving. During the past few years, many nurseries were forced by food shortages to devote part or all of their facilities to meet the food needs of nursery and forest workers. But nurseries are now devoting more of their area to trees, and farmers are producing a significant share of the seedling stock.

About 679,800,000 seedlings were estimated to be available to meet the demand for 731,000,000 in 1949. About 97 percent of coniferous requirements were available, and about 47 percent of broadleaved requirements.

Private forest owners are being encouraged by national and prefectural forest officials to increase the area of tree nurseries so that they can meet their requirements from local sources. During 1948, the Forestry Agency subsidized the production of 367,000,000 seedlings in private nurseries with Y173,000,000 ($480,000),[9] and it was planned to distribute Y205,100,000 ($570,000) for the production of 293,000,000 seedlings in 1949. The national contribution is set at 20 percent of the cost of production based on official prices as determined by the Forestry Agency. With a 4:1 ratio of national-prefectural contributions, the prefectures must contribute at least five percent of the cost in order to obtain full national government subsidy funds.

What effect the agricultural land reform law

[9]Current rate of exchange is Y360 per $1.

will have on seedling production remains to be seen. Under this law, farm holdings of absentee owners and those in excess of established ownership limits are subject to governmental purchase and resale to eligible purchasers. Nurseries, being considered as agricultural land, and newly cleared forest land to be farmed are also subject to this law. An exception is made for newly cleared land on which nurseries are established, provided, however, that it is not diverted to food crop production at any time and that its use as a nursery does not cause the total nursery area in the prefecture to exceed the limit established for the prefecture. This limit is to be annually revised upward so that nursery expansion should not be retarded. Although this exception makes it theoretically possible eventually to attain all of the nursery area for Japan's reforestation requirements, it is possible that nurseries will tend to move onto less suitable areas.

Buyers of seedlings at distant points are handicapped by poor and careless packaging practices plus failure to insure proper coordination with existing transportation facilities. Many seedlings die enroute or are in such poor condition when received that mortality is high after planting, and growth is unsatisfactory.

Inflation is one of the biggest handicaps to reforestation. The selling price of 3-year-old Japanese cedar seedlings, the most commonly used species, rose from Y9 per 100 in late 1945, to Y400 in 1949. In September 1948 the official price was Y240 while the unofficial price was Y350. In October, unofficial prices averaged Y376, ranging from Y140 to Y1000. Seed costs likewise have increased greatly.

The labor supply is not satisfactory in any phase of reforestation. Men can find employment at other work for better wages. Hence, the labor obtained is below former standards of skill and efficiency. Food and clothing shortages adversely affect the labor supply. Often workers must spend their meager wages in the black market or roam the rural areas in order to obtain sufficient food.

Although the official wage for forest labor is Y135 per day, sometimes as much as Y400 must be paid, and often food and clothing must be furnished free in order to obtain workers. Several times the official freight rates also are demanded by trucking companies. All of this adds up to very high reforestation costs, which often absorb all the revenue a forest owner receives when he cuts his timber.

The effectiveness of government subsidies is reduced because of currency devaluation after budgets are approved. For example, the current official reforestation cost is Y5,565 per acre while the actual cost, which is still rising, is Y7,785. Thus the subsidy, appropriated to pay up to 50 percent of the official cost, is at present paying only 36 percent of the actual cost. However, the fixing of a single foreign exchange rate, coupled with the general stabilization of the economy, may halt this inflation.

In addition to the problem of inflation, forest owners possessing "frozen funds" can obtain release of only enough to meet costs that are based on official prices. Thus they require additional funds when unofficial prices are paid. Banks are unwilling to make long-term loans, particularly in these inflationary times.

Shortages, particularly of food, clothing, and funds, are not confined to forestry. Neither are high costs, inflation, and the shortages and unreliability of labor and transportation. Actions taken by the Japanese government to lessen the effects of these factors on the general economic life of the country materially aid the reforestation program.

Private forest landowners have been greatly concerned that legislation may be adopted that will limit the amount of forest land they may own. This fear has not only induced some rapid liquidation of forests by clearcutting, but in addition it has removed most of the incentive to reforest such areas. This tendency is being counteracted by official statements by the Ministry of Agriculture and Forestry that legislation of this nature is neither contemplated nor desired.

Similar effects from the Ministry's land reclamation program have become manifest following the questionable designation for reclamation of some forest areas. Estimates of the Ministry are that 4,900,000 acres can ultimately be made available for reclamation and sale under the Agricultural Land Reform Program. About 75 percent of this is now classed as forest land. More than 2,800,000 acres have been reclaimed by their owners or have been acquired by the government for reclamation purposes. This includes practically all of the nonforest land. The remainder (nearly all forest land) is subject to acquisition in later years. Adverse effects of

this program are being corrected by Ministerial instructions which establish standards and require the use of qualified technicians, including foresters, in the determination of areas suitable for reclamation.

Publicity programs are being conducted by means of press, radio, posters, postage stamps, public addresses, and planting ceremonies to acquaint the public with the importance of renewing the nation's forest resources. The Emperor and Empress of Japan have on two occasions participated with occupation officials in tree planting ceremonies. Precedent has been broken by printing a reforestation slogan on special reforestation stamps, something heretofore unheard of in Japanese circles. The actions taken by the Forestry Agency and other public and private organizations reflect a growing recognition of the importance of reforestation and the necessity of completing reforestation plans.

The Need for Permanent Forest Workers

THE NEED for resident forest labor domiciled in or near forest areas is recognized in a recent publication of the British Forestry Commission,[1] briefed by E. P. Stebbing in a recent issue of *Nature*.[2] Owing to the dearth of experienced woods labor in the vicinity, a new village has been established in the Forest of Ae in Scotland where it is estimated 90 men will be required by 1960 to tend the 3,000 acres of plantations, the oldest of which are now 20 years. Another 4,500 acres remain to be planted. In addition, other men will be employed in sawmilling and other work. This indicates a requirement of one man for about 80 acres under the intensive management contemplated.

In the United States there has been a tendency at times to discourage settlers within public forests at least. The C.C.C. while a temporary project was an admission of the need for woods labor but had other purposes as well. The high turnover of inexperienced labor in such camps is another serious objection from the standpoint of the forest manager. The writer reported on a forest settlement program in Sweden.[3] Perhaps the most serious deterrent to a stabilized forest labor force in the United States is the uncertainty of markets. Yet it deserves a trial. Certainly we cannot build a sound management on temporary and transient labor.

HENRY I. BALDWIN.

[1]Forestry Commission. Britian's forests: Forest of Ae. H. M. Stationery Office, London. 1948.

[2]Stebbing, E. P. The forest of Ae, Dumfries. Nature 164 (4159) 119-120. July 16, 1949. London.

[3]Baldwin, H. I. Forest colonization in Sweden. Jour. Forestry 22:241-257.

Cronartium Fusiforme on Slash and Loblolly Pine in the Piedmont Region of Alabama

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THE INCIDENCE of *Cronartium fusiforme* (A. & K.) Hedge. & Hunt, one of the native rust fungi that attacks southern pines, has increased during the past 15 years to such an extent that it is now an important factor to be considered in planting and growing slash and loblolly pines.

During the past few years, the disease has received the attention of a number of research workers in the southern region. Siggers and Lindgren (*5*) have investigated the various stages of the disease and reported on some of the factors affecting rust prevalance and development. Muntz (*3*) reported on the relation of close spacing and the reduction of fusiforme rust. Siggers (*4*) has recently made a study of fire as it affects rust. In 1946, Boggess and Stahelin (*1*) of the Alabama Agricultural Experiment Station studied the incidence of fusiforme rust in slash pine plantations receiving cultural treatments.

A study of the existing forest tree plantations in Alabama is being conducted now by the Alabama Agricultural Experiment Station. One of the main objectives is to determine the effects that different site factors, especially soil, have on growth of plantations. Investigation of the incidence of *Cronartium fusiforme* is a part of the general study.

Study of plantations in the Piedmont region was recently completed. Approximately 400 of the 600 plantations located were examined, and 104 were selected for study because of available records and type of plantings. Included were pure lobolly pine, pure slash pine, and mixed slash and loblolly pine plantations. The selected plantations ranged from 5 to 12 years of age.

The study was made by selecting within each plantation one-tenth-acre plots that represented a particular set of site conditions. Observations concerning *Cronartium fusiforme* were made on each plot. Counts were taken of the number of trees that had limb, stem, or limb and stem infections, and these counts were converted to percentages of the total number of living trees on each plot.

The average percentages of Cronartium infection by species and by type of infection are presented in Table 1.

Comparison of Species by t-tests

Differences between the means of infection for the various species and types of infection (Table 1) were tested by standard t-tests. The results of these tests, which were later substantiated by multiple covariance tests, follow.

In pure plantations, there was no significant difference between any of the types of infection on loblolly pine and on slash pine. No significant difference was found between any of the types of infection on loblolly pine in pure plantations and loblolly pine in mixed plantations.

Highly significant differences were found between all types of infection on slash pine in pure plantations and slash pine in mixed plantations. Most of the mixed slash and loblolly pine plantations studied were alternate-row mixtures. A high percentage of the slash pine in the mixed plantations was in the intermediate and overtopped crown classes. These trees had a low percentage of Cronartium infection (Table 1).

With the exception of stem infection, highly significant differences were found between all types of infection on both loblolly and slash pine in mixed plantations and on loblolly pine in pure plantations. As shown in Table 1, the percentage Cronartium for all types of infection on both loblolly and slash pine in mixed plantations is lower than the percentage of infection on either slash or loblolly in pure plantations.

In the comparison of infection on slash pine in pure plantations to infection on both loblolly and slash pine in mixed plantations, the differences between branch infection and stem and branch infection were not significant; whereas, the differences between stem infection and total percentage of trees infected were significant.

Investigation for Correlated Factors

An effort was made to find some factors that were correlated with Cronartium incidence. By means of multiple regression, age, height, and number of trees per plot were investigated. Height was used as the criterion of site quality.

The height figure for each plot was the average height of 8 to 10 dominant or codominant trees. Number of trees per plot was used to express spacing and survival. A regression equation, with these variables, was obtained for each species and type of infection shown in Table 1, except for slash pine in mixed plantations. The multiple correlation coefficient for each equation was determined, and its significance as well as the significance of the partial regression coefficients was determined.

From the equations for slash pine in pure plantations, it was found that age was the only variable that was significantly correlated with percentage of Cronartium infection. All types of infection, including total percentage infection, decreased as age increased. There was an indication that the infection increased as height increased and as number of trees per plot increased. This increase as number of trees per plot increased can be explained by the fact that most of the pure slash pine plots had a low number of trees per plot and that only on a small percentage of the plots was there any real competition for space.

From the equations for loblolly pine in pure and mixed plantations, it was found that age was the only variable that was significantly correlated with the percentage of Cronartium infection on loblolly pine. Branch infection and stem and branch infection were found to decrease with age. Stem infection was found to increase with age.

FIG. 1.—Alternate row loblolly and slash pine plantation, showing a row of oppressed slash pine between two rows of loblolly pine. The stand is nine years old. The site is excellent.

Silvicultural Implications

As pointed out in the section on t-tests, most of the mixed loblolly and slash pine plantations studied were alternate-row mixtures spaced 6 by 6 feet. A high percentage of the slash pine in the mixed plantations was in the intermediate and overtopped crown classes, since it was found that on average or better sites the initial growth of loblolly pine is greater than that of slash pine. As the age of the trees and the quality of the site increased, the suppression of the slash pine became more severe. (See Fig. 1.)

In Table 1, it may be seen that these slower growing slash pine in the mixed plantations had a low percentage of Cronartium infection. The fact that slow growing trees appear to be less susceptible to Cronartium infection than fast growing trees has been reported by Siggers and Lindgren (*2, 5*).

The foregoing facts suggest a new method of controlling Cronartium by planting loblolly and slash pine in alternate-row mixtures or some other type of mixture; at the proper time, the plantation could be thinned by removing part or all of the loblolly pine by some mechanical meth-

TABLE 1.—INCIDENCE OF CRONARTIUM BY SPECIES AND TYPE INFECTION ON SLASH AND LOBLOLLY PINE IN THE PIEDMONT REGION OF ALABAMA

Species	Type of planting	Number plots	Percent branch infection	Percent stem infection	Percent stem and branch infection	Total percent of trees infected
Loblolly	Pure	29	12.19	14.02	3.04	23.18
Slash	Pure	21	9.10	17.55	1.75	24.90
Loblolly	Two species mixed	40	9.32	13.84	1.93	21.22
Slash	"	40	2.54	6.84	0.14	9.24
Both slash and loblolly	"	40	6.76	11.24	1.30	16.69

od. Row thinning, as described by Spurr (*6*), might be a good method to use.

An investigation of the use of various mixtures to control Cronartium infection, and a study of the advantages and disadvantages of mechanical thinning methods in these mixtures are being planned by the Alabama Station.

Summary

The Alabama Agricultural Experiment Station is at present conducting state-wide plantation studies, one of which was recently completed in the Piedmont region. The incidence of Cronartium by type of infection, i.e., branch and stem, was recorded for each plot.

In comparisons by standard t-tests, no significant differences were found between the incidence of Cronartium on (1) slash pine in pure plantations and loblolly pine in pure plantations, and (2) loblolly pine in pure plantations and loblolly pine in mixed plantations. The incidence of Cronartium on slash pine in mixed plantations was low; therefore, there was a highly significant difference between slash pine in mixed plantations and slash pine in pure plantations. Total infection (that on both slash and loblolly pine) in the mixed plantations was lower than that in either the pure slash or loblolly pine plantations. A highly significant difference was found between the infection on loblolly pine in pure plantations and total infection in mixed plantations, except for stem infection, which was not significant. Branch infection and stem and branch infection were not significantly different in the comparison of slash pine in pure plantations to total infection in mixed plantations; however, stem and total infection were significantly different.

Multiple regression was used to find some factors that were correlated with the incidence of Cronartium. Age, height, and number of trees per plot were used as variables. Age was the only variable found to be significantly correlated with the percentage of Cronartium. All types of infection on slash pine in pure plantations was found to decrease with age. Branch and stem and branch infection on loblolly pine in pure and mixed plantations decreased with age; whereas stem infection increased with age.

A new method of Cronartium control is suggested by the slower growth (and lower percentage of Cronartium infection) of slash pine when it is grown in alternate-row mixtures with loblolly pine in the Piedmont. It may be desirable to plant some type of alternating row mixture and, at the proper time, thin out part or all of the loblolly pine by row thinning or some other mechanical method. The Alabama Agricultural Experiment Station plans to investigate various slash and loblolly pine mixtures and methods of mechanical thinning in such mixtures.

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Private Management of Monterey Pine at Nelson, New Zealand

H. H. Chapman

DURING the years 1923-1925, plantations of *Pinus radiata* were established by a private sawmilling company on a block of 1850 acres in the vicinity of Nelson, N. Z. The purpose of these plantations was to insure local supplies of saw timber to take the place of the fast disappearing indigenous species.

Throughout its range of planting in the Islands *P. radiata* shows a wide variation in growth and branching habit, from a type with spreading crown and heavy branches, which often dies at an early age, to one with a narrow crown and small branches which grows 5 feet a year in height and reaches 180 feet in 50 years.[1] For these plantations seed was obtained from selected trees of the latter type that grew in the vicinity. The seed was sown in nursery beds in the spring (October) and field planting began in May and lasted three months.

The soil of the plantation area is a Moutere rubble clay, tenacious of water and deficient in humus, lime, and phosphate, but allowing free root penetration and giving excellent tree growth. The altitude varies from 300 to 1200 feet, and the topography is fairly steep with alternating ridges and gullies. Rainfall, which is evenly distributed throughout the year, varies from 38 to 60 inches. Summer temperatures average 74° F. with a minimum winter temperature of 18°. The sun shines seven hours a day on the average and winter snowfall does not lie on the ground for any length of time. The growing season, during which wood continues to be formed on the trees, is about ten months.

Before the planting was started a heavy cover of gorse and other shrubs was removed by burning during the driest period of the fall (March and April). Planting on the fairly steep slopes was at the rate of 1000 trees per man per day of 8 hours.

The plants were spaced at 9 by 9 feet, or 538 trees per acre. The purpose of the wide spacing was to encourage rapid growth and so provide material that would give an income at an early age to pay off initial costs and reduce compound interest charges to a minimum. Heavy branching was to be avoided by using seed from the small-branched type previously described. Under this regime it was found that suppression was postponed until the 14th year, at which time dominant and wolf trees averaged from 13 to 15 inches d.b.h.

The first thinning, for the production of sawlogs, was started at the age of 11 years in the 1923 crop and was completed in eight years when the 1925 crop was 17 years old. This thinning was from above, removing dominant and wolf trees, and leaving codominant and intermediate trees. Due to the youth of the stand and wide spacing, crowns were still long and recovery satisfactory. The average yield per acre from this thinning was 6382 board feet, and stumpage realization was $5 per M bd. ft.

In the 14th year, the per acre cost and returns from this plantation were in dollars at $4 per £:

Land		$ 5.00
Burning brush, repairing fences, and bulldozing gully roads and firefighting lines		
Trees at $8 per 1000, 540 per acre		4.32
Transport of labor and incidentals		.40
Planting, average 1000 trees per man day at $5 per day		2.70
		$13.16
Maintenance for 14 years at 40c per acre per year		5.60
Total		$18.76

Compound interest at 4½ percent for 14 years:

$$13.16\ (1.04\tfrac{1}{2}^{14} - 1) = \$11.21$$

$$\frac{.40}{.04\tfrac{1}{2}}(1.04\tfrac{1}{2}^{14} - 1) = 7.57$$

$$\$7.57 - 5.60 = \$\ 1.97$$

		$13.18
Adding cash costs		18.76
Total cost		$31.94
Less value of land		5.00
Net cost		$26.94
Stumpage realization, 6382 bd. ft. at $5		$31.90

Thus the costs, plus 4½ percent compound interest, were fully met by the 14th year from the cash income. From then on the operation was on an annual profit basis.

The second thinning was started at the age of 19 years, and was exactly opposite in principle to the first thinning. Begun in 1941, it will be completed in 1950 when the 1925 planting will be 25 years old. With three years to go (1948), the yield per acre has been 9594 board feet, or a

[1] This height growth was verified by the author on many plantations growing on favorable sites throughout the islands.

total for the two thinnings of 15,976 board feet, which will be increased by the older age of the remaining three years' cut. The second thinning has left the final crop trees spaced 18 to 20 feet apart, averaging 120 trees per acre.

A decision now had to be made as to the average age for the final clearcutting and reproduction of the stand. The choice lay between a 37-year and a 50-year average age. In 1951 when the second thinning will be completed, the oldest age-class will be 27 years. At 37 years, it is predicted that the average yield per acre will be 60,000 board feet, composed of 120 trees averaging 160 feet in height and 21 inches d.b.h. From this age on it is expected that increase in volume will be at a slower rate, the losses from windfall, insects, and disease will increase, and the forest floor will be invaded by brush. It is intended that the stand will be reproduced naturally from seed following cleareutting with some method of insuring adequate seed supply. Natural reproduction in this locality is good, provided the ground is exposed, competition of shrubs is negligible, and no serious drought occurs. Cones of this species are retained, with viable seed, for many years. They all open if a crown fire occurs, but will also open in absence of fire if the weather is hot and dry. Scattered slash will produce a seedling stand, or the seed may be obtained from seed trees. There are many instances of adequate natural reproduction after clear-cutting. These natural stands will have to be thinned where too dense, and the fail spots planted.

With a 50-year rotation it is feared that advance reproduction will occur in spots and hamper the management of the next even-aged stand, or that heavy brush will prevent adequate restocking. Another argument against a rotation longer than 37 years is the accumulation of interest and taxes.

Since the range of ages for the entire forest of 1850 acres is but three years, it is necessary in the first rotation to make as great an advance towards a normal series of age classes for the working circle as is possible without either cutting the stands prematurely or letting them stand too long and become decadent. The first final clearcutting will therefore begin in 1951 in the oldest stands, at the age of 28 years, and the operation will be spread over a period of 20 years, which adds 18 years to the youngest stands, making them 46 years old at the time of cutting. Thus this final cutting cycle approximates one-half of the rotation age chosen, and the new forest, beginning in 1951, will have 20 annual age classes in place of the original three classes. When the final cutting in the second rotation begins, a spread of but 17 years, or 8½ years' difference between actual age of the crop and the rotation age of 37 years will enable the management to secure a complete series of age classes for the third rotation, by the year 2018. The forest will be cut over and reproduced, during the second rotation, in 37 annual cuts as compared to 20 annual cuts for the present stand. In this final adjustment, the average cutting area will be reduced from 92.5 acres to 50 acres. Two thinnings each year will cover 100 acres, or 50 acres each. The total yield (including thinnings) from one acre, estimated at 76,000 board feet, will thus be a little over 2000 board feet per year of mean annual growth, or 3700 M board feet per year for the 1850 acres.

That these predictions of yield are conservative is shown by the data prepared for *P. radiata* on the Roturua Conservancy, North Island, which gives for first quality site at 35 years heights 131 to 151 feet, d.b.h. 20 inches, basal area 322 square feet per acre, and cubic volume to 6-inch top 14,400 cubic feet—all for unthinned stands and on a site less favorable on the whole than at Nelson. In stands of this species in the Nelson region, of similar age to the above forest and planted 6 by 6 feet apart, it is not yet possible to operate at a profit for saw timber due to early suppression and the consequent reduction in diameter growth and loss of crowns. It would appear that the initiative displayed by private industry in this operation has successfully solved the problem of growing this species for maximum profit, and has made possible the thinning of the stands as required, thus insuring the continued vigor and quality of the final crop. In addition, the pioneering work done in selecting seed from the best type of tree, followed by careful selection of best type stock in the nursery, gives promise of great ultimate benefit to all growers of softwood timber of this species in New Zealand.

Notes

Library of Department of Forests, State of Israel, Needs Books

The brief note, published in the JOURNAL OF FORESTRY, calling attention of its readers to our need for books and forestry literature was very effective and we are already in receipt of the first response.

We are now completing the building for a library and all the books received will be placed in it, bearing the names of the donors. We should, therefore, be most grateful if you could advise through your journal all those sending us books and pamphlets, specially those written by the donors, could autograph them for our library.

A. Y. GOOR,
Conservator of Forests,
State of Israel.

EDITOR'S NOTE.—Dr. Goor's address is Department of Forests, P. O. Box 88, Nathanya, Israel.

New Cone Stripper Speeds Collection of Hemlock Cones

Crown Zellerbach Corporation has seeded more than 8,000 acres of its forest land in Oregon and Washington by air since 1946. These projects require tree seed in large quantities, especially western hemlock, one of the species best suited for coastal sites. Hand picking the small hemlock cones is a slow, time-consuming job, and during this year's bumper seed crop, when it was desired to stockpile seed for future lean years, a faster method of collection was necessary.

The problem was one of rapid removal of cones from the branches without getting undue amounts of needles and twigs. In the past "stripping" was accomplished by pulling small branches through the slot produced by laying the wire handle of a water bucket down on the lip, making it necessary to cut branches into small enough pieces that stem diameters were less than those of the cones.

Merle Mosar, one of Crown Zellerbach's foresters on the Clatsop Tree Farm in Oregon, designed a portable stripper (Fig. 1). A row of 3/8 inch round steel rods are set in a 2 by 4, leaving 3/8 inch spaces between rods. Rod length is 6 inches, and the upper ends are bluntly pointed. The 2 by 4 is mounted on the vertical post of a stand, and a triangular-shaped hopper of hardware cloth built under the stripper bar. A gunny sack tied to the bottom of the hopper receives the cones as they are stripped from the branches.

Most of the 1949 cone crop was from selected right-of-way felled trees. Cone-bearing branches were lopped from the down trees and piled. Relatively large branches can be handled without further cutting by stripping one side at a time.

FIG. 1.—The Mosar cone stripper in use.

Average production per man-day was about 2½ bushels of cones, but in some cases was as much as 4 to 5 bushels. A thousand bushels of western hemlock seed were collected with Mosar's stripper on the Clatsop Tree farm, as well as some 400 bushels more on other tree farms. Proper adjustment of rod spacing makes the machine adaptable to almost any small-coned species.

Since the extraction plant required several weeks to process the 5,000 bushels of all species collected, cones were stored temporarily in thin layers on several thousand square feet of covered floor space rented from a local county fair. Seed not used this season is "banked" in a cold storage warehouse.

DONALD BAISENGER,
Crown Zellerbach Corporation.

Treating Douglas-Fir Seed with "Spergon" before Stratification[1]

While testing the effectiveness of various materials as preplanting treatments on Douglas-fir seed, the problem arose of controlling seed decay during the stratification process. The seed for such stratification is collected in cones in the fall, stored in sacks or mounds for 2 to 14 days, dried at 110° F. for 2 to 5 days, separated from the cones, cleaned by fanning, and stored in sealed cans at 40° F.[2] For stratification the seed is stored at 34° F. in a mixture of one or two parts of subsoil sand to one of seed, kept moistened, and stirred at 1- to 2-week intervals for 6 to 8 weeks. When the seed is ready to be planted, it is washed free of sand on screens, surface dried, and sown within 24 hours.

When the weather is excessively moist during the period of seed collection, many seeds become moldy. The mold (mostly *Fusarium* sp.) spreads from these to healthy seeds during stratification, causing the formation of large clumps of rotten seed and sand. Weekly stirring of the stratified seed assists in controlling the mold, but does not eliminate it.

Spergon had shown some promise in our preliminary tests as a preplanting Douglas-fir seed treatment and appeared to be without phytotoxic effect to the seeds. Douglas-fir seeds were, therefore, treated in 1944 and 1945 with Spergon, the excess amount screened off, and the seeds stratified with twice the volume of nonsterilized subsoil sand according to the usual procedure, with the exception that the sand-seed medium was not stirred during stratification. The seeds were given another similar treatment with Spergon prior to planting in the greenhouse and field. Five replications were used in all of the following tests.

Several moldy clumps of seed and sand developed in all the untreated lots. No such clumps developed in the Spergon-treated lots although an occasional seed molded.

To determine if there was any phytotoxic effect of the Spergon, samples of 500 seeds from both untreated and treated lots were placed in a seed germinator, after all apparently molded seed was discarded. The germination was 70 and 76 percent respectively. Similar samples of 500 seeds were planted in chloropierin-sterilized soil in the greenhouse. The germination of the untreated lot was 35 percent as compared with 67 percent for the treated lot. In a field test in 1945 involving two soil types and 2,000 seeds per treatment, the germination of the untreated lot was 43 percent and of the treated lot 46 percent.

Thus Spergon treatment not only prevented loss of many seeds from molding during stratification, but also increased slightly the percentage germination of the remaining healthy seeds. In addition, the Spergon-treated seed was found much easier to handle and to separate from sand than nontreated seed. Treatment both before and after stratification generally gave better results than did a single (prestratification) treatment. Treatment of Sitka spruce seed was also beneficial in similar but small-scale experiments. Since the preceding discovery all of the Douglas-fir seed at the West Coast Lumbermen's Nisqually Nursery has been Spergon-treated.

CHARLES J. GOULD,
Western Washington Experiment Station, Puyallup, Washington.
CHARLES E. REYNOLDS,
Aerial Mapping Company, Portland, Ore., Formerly West Coast Lumbermen's Association.

[1]Published as Research Note No. 7, Agricultural Experiment Stations, Institute of Agricultural Sciences, State College of Washington, Pullman, Wash.

[2]This process was the one used at the West Coast Lumbermen's Association forest industry tree nursery in 1944.

We Present

John Arden Ferguson
Forester, Educator, and Builder of Men

JOHN ARDEN FERGUSON, affectionately known as Fergie by Penn State forestry graduates since 1909, has earned and enjoys an enviable reputation among foresters as an educator, administrator, and builder of character. Devoting his life to education, he lacks some of the qualifications which would entitle him to be classed with the dirt foresters, but he rates high in the esteem of the many dirt and desk foresters who have had the good fortune to learn their profession under his wise direction during the nearly three decades he shaped and guided the destiny of forestry training at the Pennsylvania State College.

Among his "alumni" Fergie quite properly includes a large number of professors and a dean or two now teaching or directing forestry training in other institutions. These are men who came to Penn State as fledgling instructors and who developed under Fergie's guidance and counsel into leaders in the profession of building future foresters.

He first saw the light of day on December 23, 1873, in Canandaigua, N. Y. His father, Harrison Boggerly Ferguson, of Scotch ancestry, was a lieutenant in the Civil War and county treasurer. His mother was Ella Clara (Woder) Ferguson. His early school days were spent at Canandaigua Academy, N. Y., and from there he went on to earn the B.A. degree from Hamilton College in 1896 and the M.A. degree in 1903. He is a member of Chi Psi and Delta Theta Sigma fraternities. Before entering Yale, he taught at the Brooklyn Polytechnic Institute and at Rutgers Preparatory School, New Brunswick, N. J.

After graduating from the Yale School of Forestry in 1908 at the age of 35, he became forest assistant in the U. S. Forest Service on the Boise National Forest. In the same year he was offered and accepted the position of instructor in the Forestry Department of the Pennsylvania State College, and a year later was promoted to the position of assistant professor, and was in charge of the department during the period 1909-1910. During the summers of 1910-1911 he served as instructor in the Yale forestry camp, and in 1911 with the position of professor he founded the Department of Forestry at the University of Missouri. From January 1913 to September 1937 he served as head of the Department of Forestry at the Pennsylvania State College.

On September 14, 1911, Prof. Ferguson was married, in Allentown, Pa., to Susan Kathryn Becker of that city. They had two children, John Becker and Eleanor. His second wife was Blanche Swainhart, a trained nurse of Cleveland and a social settlement worker at Hiram House in that city. Their marriage took place in 1921.

In politics, Fergie is a Republican and might be classed as an independent and progressive. He is a Member of the Society of American Foresters, the American Forestry Association, the Pennsylvania and Canadian Forestry Associations, and is a Fellow of the American Academy of Arts and Sciences. He is a Mason. In 1911-1912 he was a delegate to the Conservation Congress, and in 1912 delivered an address before the State Conservation Congress.

Prof. Ferguson and Penn State forestry are almost synonymous, despite the fact that he was not on hand to launch the first courses of instruction in forestry that were offered at State College. In the fall of 1906, eight young men with a desire to take part in the development and management of our renewable natural resources

JOHN ARDEN FERGUSON

enrolled as foresters at Penn State, but there was no one to teach the forestry subjects. In February 1907, Dr. Bernhard E. Fernow became the first head of the new Department of Forestry. He was followed by Prof. Hugh P. Baker, and in 1908 Instructor Ferguson was added to the faculty. From that time on, Fergie played a most important role in developing forestry education at Penn State.

Fergie was not merely a nickname; it conveyed the friendly feeling we had for him and, more to the point, it was given in recognition of the fact that he was our friend. His eyes could open saucer wide in a face that ably expressed its owner's various emotions, and they had a twinkle in them that meant more than we were sometimes aware of. His early education and professional experience as a teacher provided a solid foundation for the task of directing and guiding the training of young men many of whom had the "call of the wild" in their systems and needed sound counsel and guidance. His success in fulfilling these obligations to his students has long been recognized by the forestry profession.

Although a scholar—he specialized in Latin and Greek Classics at Hamilton College and spent ten years teaching chemistry, physics and mathematics before taking his forestry degree at Yale—and somewhat a kindly disciplinarian in the classroom, he failed to look the part outside the school building. While walking the dimly lighted main street of Mont Alto on the eve of registration in 1929, he was accosted by one of his freshman students who asked, "Say, old timer, where can a man buy a drink in this town?" Typical of Fergie, he delayed the shock of recognition until the next day when the "old timer" appeared at the first student assembly as head of the school. The incident was regarded by Fergie as a teaching experience. The student to this day regards it as a great learning experience.

The history of forestry instruction at Penn State is largely the story of his aims, objectives, and policies, and of the hard-won success which he and his associates achieved. Over the years he carried on the affairs of the department in the belief that better facilities, equipment, and teaching staff would result in raising the quality, proficiency, and ethical standards of its alumni. For many years, he and his associates carried on under most trying difficulties—with cramped, substandard quarters, inadequate teaching staff, practically nonexistent equipment, and many other discouraging handicaps. But he aimed high, held tenaciously to the mark, and eventually scored. The Penn State forestry alumni and the forestry profession owe him a great debt of gratitude.

The Forestry Building at Penn State now stands as a monument to Prof. Ferguson, although he never taught a class in it. The building was erected after his retirement, but it was his development of professional forestry instruction at Penn State which made the building necessary. He crowded more learning and more students into the old green shack, as the former building was known affectionately to the foresters and derisively to all others who viewed the campus eyesore, than it was capable of holding. The students, who jammed into six square feet of insecure floor space apiece, hold an affection for the rickety structure as they do for the man who shared the congestion with them. Lack of modern facilities did not deter Fergie in his efforts or impair his results. To him the inadequate and antiquated building was a challenge. And from his acceptance of the challenge Penn State foresters have learned his secret of adapting the material at hand to the purpose to be served.

Fergie retired in 1937 and for a number of years divided his time between St. Petersburg, Florida, and State College, Pennsylvania, where he now makes his permanent residence. His hobbies include the painting of landscapes and visiting with former "studes." He has an office in the new Forestry Building on the college campus, but one is most likely to find him at his home which is always open for his many friends and graduates.

IRA T. YARNALL.

Reviews

Forest Conservation in Colonial Times. By Lillian M. Willson. 32 pp. Illus. Publication Number 3, Forest Products History Foundation, Minnesota Historical Society, St. Paul, Minnesota, 1948. 50 cents.

The Forest Products History Foundation was described by its director at the 1947 annual meeting of the Society of American Foresters. The Foundation was organized by a group of Minnesota lumbermen and financed with a three-year grant from the Weyerhaeuser and Denkmann families. To date, it has published four attractive bulletins. The first is a prospectus of its work. The second, *Time in the Timber*, describes a high school graduate's experiences as a camp clerk on one of the last big logging operations in Minnesota. The fourth, *The Man Who Knew Trees*, is an all-too-brief autobiography of Jim Girard, former timber cruising wizard of the U. S. Forest Service.

The third bulletin, the one reviewed here, is a popular account of forest conservation in American colonial times by Lillian M. Willson. This publication does not add much to previous knowledge of the subject, but it serves a useful purpose in making that knowledge readily available, since most of the earlier writings on colonial forest history are no longer in print.

A number of authors have given attention to American colonial forest policy, although none have exhausted the subject. In her bibliography Mrs. Willson lists J. P. Kinney's *Forest Legislation in America prior to March 4, 1789* which first dealt extensively with colonial forest legislation, but she fails to mention some other writers, such as Jenks Cameron, with whom most foresters are acquainted. Mrs. Willson presents much the same material as these earlier works, although in a more readable style. She is especially successful in relating colonial forest policy to its European origins, and has apparently done a careful job of tracing here references back to original documents, although in doing so she cites references to which most interested people do not have access. At a few points she makes statements which one might wish had been documented.

A preliminary reading of her manuscript by a forester might have helped her to avoid a number of blunders. For example, she intimates that oak and chestnut are not rot-resistant, and that to box a tree for turpentine is to "slash with a hatchet." She states that English oak was "unavailable" for masts, when "not suitable" would be a more accurate description. A more serious blunder is her mistake of *land* for *timber*, in saying that the reservation of mast trees by the Crown on grants of land under the Massachusetts charter of 1691 meant that "there was very little land in Maine which could be considered private land." Actually, the reservation of mast trees by the Crown affected the ownership of only the larger trees, and the land not at all.

Mrs. Willson overemphasizes the effect of "Indian forestry practices" on the forests of pre-colonial America. If, as she says, the "wooded areas were astonishingly free of underbrush" when the colonists arrived, it was largely because of root competition and the heavy canopy of the forest and not because of "thinning" by Indians. When the Indians needed timber they usually used fallen trees rather than standing ones. "Logging and clearing was women's work, and bringing down the forest giants, particularly the huge hardwoods in the valleys, without tools was too much for even the most docile squaw." Apparently Mrs. Willson based her observations largely on the comments of two men: Peter Kalm and Andrew Burnaby, who did not visit colonial America until the middle 1700's.

Mrs. Willson also comments on the "very slow and tedious" transportation of logs along the waterways. The fact is, that water transportation was by far the most efficient method available in colonial days.

Despite these defects, Mrs. Willson's bulletin provides an attractive summary of American forest policy in colonial times, useful for adults and upper-level classes in conservation, but not written simply enough for primary schools.

Considered together, the four publications of the Forest Products History Foundation give some clue as to the progress of its work. Apparently, the Foundation is placing greater emphasis on the collection of source material and the issuance of popular pamphlets than on original research. The Foundation has un-

doubtedly sponsored a good deal of research, but few of the results have been published. Greater progress might be possible if more use was made of foresters and historians who have specialized in forest history. Six of the ten members of the national advisory board of the Foundation are connected in one way or another with the lumber industry, but the chairman of the board is the only forester attached to the organization, and he is not a specialist in forest history. The Foundation should certainly enlist the advice and assistance of such people as the world-renowned forester, Dr. Raphael Zon, who now lives in retirement in St. Paul, or Dr. Agnes Larson, head of the history department at near-by St. Olaf College, whose *History of the White Pine Industry in Minnesota* was published this year by the University of Minnesota Press.

HENRY GILBERT WHITE,
Ogden, Utah.

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A Sand County Almanac. By Aldo Leopold. 226 pp. Illus. Oxford University Press, New York. 1949. $3.50.

"Conservation is a state of harmony between men and land." That statement, written by Aldo Leopold in his last book, *A Sand County Almanac and Sketches Here and There*, is probably the greatest truth to be proven to himself during his forty years of conservation work. It was no doubt that belief and his own desire to accomplish immediately what his keen perception told him should be done that led him to write in the foreword of his book, "Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

It is in the third part of his book that he discusses the broad problems of wildlife management and conservation.

Part I consists of several essays, grouped seasonally, that combine scientific observations on his Wisconsin farm with philosophical musings and that exude his love for things in nature. Reminding one of Donald Culross Peattie's *An Almanac for Moderns*, Leopold's observations and deductions are often expressed in poetic beauty. Witness, "Amid the endless mediocrity of the commonplace, a crane marsh holds a paleontological patent of nobility, won in the march of aeons, and revocable only by shotgun. The sadness discernible in some marshes arises, perhaps, from their once having harbored cranes. Now they stand humbled, adrift in history."

In the mid-part of the book are writings done in the Midwest and Southwest, in Canada and Mexico, and in other places where Leopold worked, and saw, and thought deep thoughts.

Pleasantly informative, provocative of thought, and inspirational, this book is of high technical merit yet will probably be of greatest value in developing a deeper appreciation for the land and the life it supports.

ROBERT D. HOSTETTER.

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Forest Surveying: Part 1. By Ralph G. DeMoisy. 123 pp. Illus. Published by Oregon State College Cooperative Association, Corvallis, Ore. 1949. $1.60.

Because in many regions of the United States forest surveying is a special kind of land measurement in that it is often done under tough topographic conditions, the teaching of forest surveying may require a different kind of instruction than that customarily offered in civil engineering courses. To be sure, basic principles are the same, but the forestry student is best trained who gets at least some of his field experience in rough terrain.

In his preface Prof. DeMoisy explains that this publication, which apparently is the first issue of other parts to come later, "is designed to meet the requirements of an introductory course in forest engineering. It is by no means intended to cover the entire field. The text deals with the less precise and less expensive methods of forest surveying, i.e., the measurement of distance by steel tape and pace, direction by compass, and elevation difference by abney level and aneroid barometer. Much of the material set forth is treated with insufficient detail in standard surveying textbooks."

The publication appears to cover the foregoing fields most adequately. It promises to be useful not alone to the student forester, but to the practicing field forester as well.

Reproduced by lithography, the text and illustrations are for the most part clear. In subse-

quent additions, a larger page size will allow greater legibility. Unfortunately, several tables —as for example, Tables 5 and 6 in the copy herewith reviewed—are almost microscopic in size.

Formerly assistant professor of forest engineering at Oregon State College, the author is now with the Institute of Forest Products at the University of Washington.

HENRY CLEPPER

Bibliography of Cultivated Trees and Shrubs Hardy in the Cooler Temperate Regions of the Northern Hemisphere. By Alfred Rehder. 825 pp. Arnold Arboretum of Harvard University, Jamaica Plain, Mass. 1949. $20.

Prof. Rehder's final work, published a short time before his death on July 21 at the age of 85, is an appropriate and lasting monument to this distinguished dendrologist, horticulturist, and bibliographer, of the Arnold Arboretum of Harvard University. The *Bibliography* is an enlarged companion volume to the author's *Manual of Cultivated Trees and Shrubs Hardy in North America Exclusive of the Subtropical and Warmer Temperate Regions* (Ed. 1, 1927; ed. 2, 1940).

For the cultivated woody plants described in the *Manual*, the *Bibliography* contains the citations of place of publication of scientific names as well as complete synonymy. Accepted names, followed by their synonyms, appear in the same botanical arrangement as in the *Manual*. There is also an alphabetical index of 165 pages containing these names. The nomenclature of the *Manual* has been revised to the end of 1947. Additions and emendations inserted while the work was being printed total 14 pages, and the explanation of abbreviations of serials and titles occupies 21 pages. Thus, in content, the volume is a bibliographic supplement to the *Manual* or an index of nomenclature, rather than a bibliography of publications about cultivated trees and shrubs of its range. The title is somewhat misleading.

Rehder's *Bibliography* is a pioneer reference in its field. At the close of the last century, two compilations of the nomenclature of the native trees of the United States, with detailed synonymy, were published, one by Charles Sprague Sargent in his detailed work, *The Silva of North America* (14 vols., illus. 1891-1902) and the other by George B. Sudworth (*Nomenclature of the Arborescent Flora of the United States.* U. S. Department of Agriculture, Division of Forestry Bul. 14, 419 pp. 1897). Though excluding the native trees not also in cultivation and those of warmer temperate and subtropical regions along the southern border of the United States, Rehder's *Bibliography* summarizes accurately the scientific names for a large portion of the native trees of the country. The numerous changes in names and new names, especially of varieties and forms, which have been proposed for these trees during the present century are recorded.

The greater part of this book concerns other trees in cultivation and shrubs used in horticulture not only in cooler parts of North America but in Europe and Asia as well. Nomenclature of cultivated plants is exceedingly complicated because of numerous horticultural varieties and forms, some irregularly described in trade catalogs, and is not covered in botanical indexes of nomenclature. Now the scientific names and citations for these horticultural variations of woody plants have been brought together in a single volume. Many new combinations, including reductions of varieties to forms according to the author's views, are published here.

As an indispensable reference on plant nomenclature, Rehder's *Bibliography* will occupy a place of honor beside *Index Kewensis*. Dendrologists and systematic botanists will find it very helpful and time-saving in finding names, citations, and synonyms. Since the author was a recognized authority on nomenclature, the accepted names naturally conform to the latest International Rules of Botanical Nomenclature. However, in a few cases the scientific names and their rank are subject to personal opinion or to different interpretations of the rules.

This reviewer, while checking the nomenclature of the native and naturalized trees of the United States, has found the author citations in Rehder's *Manual* to be up-to-date with current knowledge and unusually accurate, more so than in most botanical works, in fact almost perfect. The *Bibliography* maintains the same high standard of accuracy in detail and is about as near perfection as one person could attain in compiling a work of this kind. Though omissions and errors can be detected (for example, the spelling "Salisburyaceae" instead of "Salisburyacea" on page 1), they are extremely scarce.

The highest praise is due the author for his enthusiasm and devotion to his work in undertaking a bibliographic compilation of this magnitude in 1940 upon his retirement from active service at the advanced age of 76 and for remaining at this painstaking task voluntarily until completion of publication almost nine years later. The war caused postponement of printing and delayed the receipt of new foreign publications.

Having an unusually broad background, Prof. Rehder was well qualified for this project. Born in Saxony in 1863, he served as assistant superintendent of a botanic garden and as assistant editor of a horticultural magazine in Germany before coming to the United States in 1898. He was associated with the Arnold Arboretum more than fifty years, where he worked with Charles Sprague Sargent and became associate professor of dendrology and curator of the herbarium. In addition to numerous journal articles on woody plants, he contributed most of the articles on hardy trees and shrubs in L. H. Bailey's *Cyclopedia of American Horticulture* and *The Standard Cyclopedia of Horticulture*. He was compiler of *The Bradley Bibliography, a Guide to the Literature of the Woody Plants of the World* (5 vols. 1911-1918), on which he labored sixteen years, and wrote portions of Sargent's *Plantae Wilsonianae*, on Chinese woody plants collected by E. H. Wilson.

ELBERT L. LITTLE, JR.,
U. S. Forest Service.

Construction and Maintenance of Forest Truck Roads. By C. R. Silversides. 137 pp. Illus. Pulp and Paper Research Institute of Canada. Montreal, 1949. $2.50.

The latest in the series of handbooks on logging is this report by C. R. Silversides prepared under the direction of Alexander Koroleff. It is the answer to the question: how to make and to maintain forest roads not only better but cheaper?

The book starts with the economic basis for forest road construction, with a consideration of road standards and location, and the testing of road-building materials. This is familiar ground, but what follows is new: a discussion of forest truck road construction including clearing, grinding, filling, surfacing, ditching and drainage.

Logically, the next chapter deals with forest truck road maintenance, with special emphasis on winter maintenance of truck roads.

The succeeding chapters deal with location and construction of bridges, and with road equipment and machinery. The book concludes with tables that will prove useful in construction work, and with a list of nearly one hundred references.

The strength of this book is in its practicality. For example, under "Road Standards" the author shows that proper sight distance is one factor that is most often neglected in the construction of forest roads. He further explains, "Very little road locating is done today without the use of aerial photographs. These photographs are used in the field as well as the office, and in the hands of an experienced man are invaluable."

As in previous books of this series, small photographs together with small-scale drawings, are used in profusion to illustrate the text. Some of these are very illuminating; but others are too small, or, in some cases, too obscure.

This book, which doubtless will find wide application among foresters and loggers, is a timely contribution from a source that has hitherto furnished many similarly useful publications. It is a commonplace observation that forest management requires good roads; contrariwise, good roads may facilitate abuse of the forest. It is to be hoped that this book will preclude the latter use while helping to effectuate the former purpose. Congratulations to the author and his collaborators on this timely and practically useful work.

A. B. RECKNAGEL,
St. Regis Paper Company.

The Silvicultural Research Code. Vol. 2, The Statistical Manual. By A. L. Griffith and Bakshi Sant Ram. 214 pp. Forest Research Institute, Dehra Dun, India. 1947. 17s.6d.

All forest research organizations are faced with the regrettable fact that most foresters have been able to complete a professional curriculum without understanding the concepts and symbols of intermediate mathematics, and without exposure to the rigorous discipline of logic. Together, these deficiencies make for a condition of inductive and deductive illiteracy which

greatly handicaps the efficient prosecution of research in forestry.

Since 1931 the Forest Research Institute at Dehra Dun, India, has pioneered among government agencies in trying to provide its workers with an official field manual covering the application of statistical methods to silvicultural research. This 1947 revision is supposed to include the latest developments in the field. In reading it one must bear in mind that its purpose is not to expound theory, but to give a synopsis of technique useful in testing broad types of hypotheses, and to provide models for the most frequently encountered elementary mathematical calculations.

It is quite successful in giving many illustrations of tests of hypotheses involving forestry, with special emphasis on the mechanics of partitioning sums of squares in essentially simple balanced forms of analysis of variance. It does not go into the parametric structure of mean square tests nor into confounding, dummy plots, disproportionate frequencies, etc.—probably wise omissions in a field manual. The examples and description of randomized block layouts, Latin square layouts, simple factorial designs, and split plot designs are good. The value of covariance analysis and adjustment for initial differences is emphasized and illustrated in detail. There is also a good section on classical least squares fitting of straight lines, simple polynomial curves, and non-integer potential and exponential curves.

The following topics are woefully neglected: principles of stratified sample design, assessment of sample precision, optimum allocation designs for various sampling objectives, c-multiplier techniques in multiple net regression, joint regression, orthogonal polynomials, analysis of Chi square into component elements, shortcut Chi square contingency table formulae, shortcut square and cross-product summation formulae for equispaced variables, shortcut correlation table techniques, fiducial desirability of an orthogonal set of single degree of freedom comparisons constructed in advance of outcome, and illustrations of systematic checks in variance and regression calculations. Although possibly deliberate (though not because of expediency), these omissions definitely lower the value of the manual to the field forester.

Invalid inference may result from the authors' overlooking split plot compulsion in locality tests (p. 159 and 173), and from their implication that the usual confidence interpretations are valid for all possible intra-group t tests following a significant F test (exemplified by attaching significance to all possible differences greater than a least signicant difference). Of course, Nair's and Tukey's papers on the subject were not available in 1947.

The average forester will probably prefer to use the 1946 revision of Snedecor's *Statistical Methods* rather than *The Silvicultural Research Code* Vol. 2, which was prepared before the revised Snedecor was available. Those foresters, however, with a statistical phobia who are engaged in routine field tests of clearly formulated null hypotheses may find its concrete forestry illustrations and detailed calculation layouts helpful, despite its lack of provision for systematic checks. Its emphasis on orthogonal design (balance, replication, and a minimum of randomization) is healthy, and its casual approach to prerequisites for validity of illustrated techniques will do no great harm where situations resemble the models reasonably closely; in any case, this risk of misapplication is a danger which must be accepted by all manuals which exclude underlying mathematical bases from their scope.

LEWIS R. GROSENBAUGH,
Southern Forest Experiment Station.

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Forestry and Water Supplies in South Africa. By C. L. Wicht. 58 pp. Illus. Bul. 33. Department of Forestry, Union of South Africa, Pretoria. 1949. 6d.

The effect of forest growth on the water yield of watersheds and the reduction of yields following the afforestation of certain areas has received in recent years the increased attention of foresters, hydrologists, and others interested in forest influences. The author, who is the chief forest research officer of the Department of Forestry of the Union of South Africa, has summarized in this bulletin the results of extensive investigations of the alleged desiccating effect of afforestation on water supplies in the Union.

The total indigenous forest area of the Union is small, representing less than ¼ of one percent of the land area and the overall effect of these forests on the country's water supply is small. In addition about 1,825 square miles of the Union (472,550 square miles) have been afforested. There has been considerable discussion

in the South African press, and a certain amount of antagonism on the part of ranchers, farmers, and municipalities, concerning the afforestation program. A mass of evidence, mostly circumstantial, has been presented to the public forestry officials to show that these plantations of exotics were seriously depleting the country's water supply.

The report is divided into three principal sections. The first presents a summary of the hydrology of the South African forest regions, and points out the variations in the water cycle in the different parts of the country where trees are planted. Data on precipitation, temperature, stream flow, and ground water are presented and summarized graphically. The rainfall measurements are particularly valuable, in some cases covering a record period of over a hundred years, and definitely establishing the occurrence of periods of maximum and minimum rainfall. It is noteworthy that many of the reports of desiccation by plantations could be correlated with periods of declining rainfall.

The second section of the bulletin is devoted to a discussion of the modifications of the water cycle through land management. It includes a review of some European and American literature. The author points out that there is a wealth of evidence to the effect that vegetation can have a highly significant influence on the hydrologic cycle on a particular site; but that the discovery of irrefutable evidence that a change in vegetation rather than a complete removal of vegetation can produce a change in the hydrologic cycle remains as the goal of his investigations.

Direct evidence from local studies are presented in the third part of the report to substantiate claims of the effect of a change in vegetation on the water supply of a catchment area. The study areas are grouped by localities, but unfortunately a sketch map showing these areas which would help in orienting the reader is not included. On the basis of investigations the author concludes that:

1. On comparable sites, plantations of exotics grown to timber size will not use more water than indigenous forests.
2. Plantations of exotic and indigenous forests will probably use more water than sclerophyll scrub or grass communities.
3. The consumption of water by plant communities depends on the amount of available water in the soil.
4. Plant communities of the same ecological order will probably use approximately equal volumes of water.
5. Swamps tend to dry up if trees are planted in them.
6. Other factors being equal, there is no evidence that fast growing trees use more water than slow growing trees.
7. The removal of vegetation from catchments, especially stream banks, will cause an increased discharge from the streams.
8. Heavy ground cover provided by plantations and forests retards floods, builds up and conserves the soil.

When tree planting is considered the following recommendations are made:

1. Extensive afforestation should not be undertaken, unless there is a reasonable chance of making a good profit, or unless there are special local conditions or aesthetic values involved.
2. Afforestation should, as far as possible, be restricted to forest regions with high rainfall.
3. Long rotation timber crops should be preferred to short rotation quick profit crops, such as mine-props.
4. Where the discharge of streams is used for irrigation, industrial or municipal purposes, the moist areas along the streams should not be planted.

DONALD P. WHITE,
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Native Trees of Canada. Canada, Department of Mines and Resources, Dominion Forest Service, Bul. 61. Fourth Ed. 293 pp. Illus. Department of Public Printing and Stationery, Ottawa, Canada. 1949. $1.50.

The fourth edition of *Native Trees of Canada*, replacing the edition of 1939, is a new, enlarged work neatly printed by offset process with nearly half as many additional pages. Outstanding are the new illustrations. Numerous excellent photographs replace the line drawings of prior editions. A colored map, "forest classification of Canada," appears on both end papers, where it is conveniently located for reference.

This popular publication describing the characteristics and uses of Canadian trees contains a foreword by D. A. MacDonald, Dominion forester. Much of the original material prepared by B. R. Morton and R. G. Lewis, authors of the first edition in 1917, has been retained.

The checklist of the native trees of Canada, with botanical, English and French names, occupies 5 pages, and a list of 17 changes in nomenclature brings the scientific names up-to-date. As compiled by this reviewer, the total is 48 genera, 153 species, and 18 additional varieties of native trees. Of these, 10 genera, 31 species, and 4 varieties are conifers and the remainder are broadleaf trees. The only broadleaf evergreen tree native in Canada is arbutus (*Arbutus menziesii*, or Pacific madrone) of southwestern British Columbia. The text follows the usual botanical order of genera. A table of contents and an alphabetical index are included but no keys.

Two pages are devoted to each species, except for willows, apples, hawthorns, serviceberries, and dogwoods, small trees for which insufficient data on individual species were available. Each of the larger genera has two introductory pages also, in which the more common foreign species in cultivation are briefly mentioned. The species are treated uniformly, with text and map on the left page and photographs on the right. Following the official common name, scientific name, and other common names are notes on description, distribution, habitat, and uses. The outline map shows in solid green (instead of diagonal black lines of former editions) the range or natural occurrence in Canada and adjacent parts of northern United States. Beneath the map are concise descriptions of leaves, flowers, fruit, twigs, bark, and wood. The right page consists of unusually clear photographs of leaves, winter twigs with buds, fruits, and in some cases flowers also. Scales of photographs, which are near natural size but not the same for the separate figures, usually are indicated by a background of one-inch squares. Photographs of trunk, illustrating the mature bark, and of habit are included for some species.

This valuable publication sets a high standard for popular tree manuals and will be useful along the northern border of the United States and in Alaska as well as throughout Canada. As a Canadian government publication sold at cost of printing, the book is an extraordinary bargain at the low price of $1.50.

While the subject is adequately covered, perhaps in the next edition more space can be given to willows and other shrubby trees, and to the exotics. The different photographs would be more comparable and more easily used if reduced to a few uniform scales, each an exact fraction or multiple of natural size.

Several English names of trees adopted by the Dominion Forest Service for official usage differ from those approved for the same species by the U. S. Forest Service. For example, amabilis fir in Canada is Pacific silver fir in the United States, red juniper is eastern redcedar, Manitoba maple is boxelder, white birch is paper birch, and trembling aspen is quaking aspen.

ELBERT L. LITTLE, JR.,
U. S. Forest Service.

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Humus and the Farmer. By Friend Sykes. Rodale Press, Emmaus, Penna. 1949. $4.50.

In discussing the organic method of operating a farm with present day agronomists, the latter invariably end the discussion by saying that the ideal method of fertilization of the soil includes plenty of both organic and artificial manures. This is a difficult argument to refute, but Mr. Sykes deals with it more convincingly than any writer on the organic side of the controversy has yet done. A follower of Sir Albert Howard, who first challenged the current farming practices of England, following prolonged experimentation in India, Friend Sykes is probably one of the fairest among outspoken advocates of the humus versus the chemical fertilizer methods.

Mr. Sykes arrived at his conclusions in the course of thirty years of successful farming. In the beginning, as he relates, he suffered a thoroughly disillusioning experience. His was one of the finest herds of Fresian cattle in all England, and his horses were winning many coveted championships. In the late nineteen twenties the Ministry of Agriculture discovered that all was not well with the nation's milk supply, and by way of grading up the herds established the first Accredited Milk Scheme. Since the Sykes herds enjoyed a top rating at that time, their owner was requested by the University of Reading to submit to the tuberculin test, and readily agreed. Judge of his surprise when these premier herds of three counties reacted 66 percent diseased. What, he asks, must have been the condition of all the other dairy cattle in that area? At about the same time the Sykes horses also began to decline.

The book describes in detail how the condition was overcome through development and diligent use of humus, and complete abandonment of all artificial fertilization of land.

The major lessons which Mr. Sykes sets down

as having been learned over a thirty-year period are that the well-being of mankind is interdependent with that of the animal, the plant, and the living soil; that fertile soil is rich in humus; that whenever the humus content of the soil is depleted (as in the growing of a wheat crop) the humus must be replaced with more humus manufactured by the biological processes, e.g., by way of vegetable growth (as in grass) and by its decay, when plowed, accelerated and activated by the earthworms and by the micro-organisms of animal dung and urine.

The author takes issue with the advocation of chemical fertilizer in rather strong terms: "For over a hundred years the world has labored under a sad and pitiful delusion that the refertilization of land is a chemical and not a biological process, and because there have grown up in England and America most powerful interests who are determined that the world shall not be disillusioned."

With remarkable knowledge of organic chemistry and farming practices, both in relation to animals and plants, Mr. Sykes defends his contention that the preparation of adequate humus for the land is not the insurmountable problem which the average person considers it to be, but that it can be accomplished more economically than by adding artificials to the soil.

The book undertakes to answer, and certainly does answer in a convincing manner, many questions concerning technique and supply which to the layman would appear insurmountable. Here and there the reviewer finds a subject to which an entirely adequate answer seems to be lacking. For example, it is stated that chemical sprays destroy practically all the earthworms underneath the area treated, and is, therefore, an injurious practice. But does the use of humus entirely eliminate the need for chemical sprays for control of injurious insects in extreme cases?

Foresters will read this book with thoughtful interest, and will find it impressive in its presentation of the argument in favor of humus. Trees are notorious seekers after mineral matter in the subsoil. So are some of the grasses used in the process of developing humus. And trees throw down tons of leaves annually in support of the proposition that humus is necessary to a fertile soil and a healthy forest.

JAMES R. SIMMONS,
Bel Air, Md.

Current Literature

Compiled by MARTHA MEELIG, *Librarian*
The New York State College of Forestry

Range Management Section Compiled by
FRANCES FLICK, *Library, U. S. Department of Agriculture*

General

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Society Affairs

Officers and Members of the Council—1948-1949

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Report of the President

It would seem fitting, at this the last meeting at which the present officers and Council of the Society take part, to review briefly the work of the Council and to venture a few personal opinions regarding the future of the Society.

First, however, I wish to say to you that it has been a real privilege to work with this Council. Broadly representative of the various interests of the Society, consisting of mature and able foresters who think and act along national rather than sectional lines, its members have given much time and thought to Society affairs. It is unique, I believe, in that no serious differences of opinion have arisen. All but a very few Council votes have been unanimous, and when one or two minority votes were cast, they were on rather minor details.

The first objective of the Council was to place the Society on a sound financial basis. It was distinctly unsound to operate with annual deficits during prosperous years. There were and are many desirable projects which the Society should undertake if it is to occupy a position of influence worthy of the profession. We have only made a beginning at reaching some of these objectives. But, with the help of a conscientious Finance Committee consisting of non-Council members, the Society expects to end this year with a small surplus. This is as it should be, but there are many desirable jobs to be done and every dollar of dues collected should be put to work, but without mortgaging future income.

Code of Ethics

After many years of discussion, the profession of forestry now has a Code of Ethics which expresses publicly the working rules under which foresters operate. This code is far from perfect and will need to be revised and strengthened from time to time. But it does establish the profession as one devoted to high ideals and to service in the public interest.

Chapters

The steady growth and wide dispersal of Society membership during recent years had led to the spontaneous organization of smaller groups of members who desired to take a more active part in Society affairs than was possible under the current sectional organization. This was natural and desirable. It made possible a closer relationship between foresters whose duties kept them in the field, too remote from the larger cities where Section meetings were held for frequent attendance at Society meetings. It

promoted more discussion of technical problems among foresters working for different agencies, thus furthering understanding and cooperation between those agencies. It permitted more detailed study of local and community problems. It led to the realization by people in the smaller communities that foresters were working in their neighborhoods and that their work was of real public benefit. And above all, it gave the younger members of the Society an opportunity to discuss and participate in Society affairs.

These groups have now been recognized as working units of the Society operating under the sectional organizations. Their establishment is entirely voluntary and subject to approval by the Sections. They may operate as organized units of the Society or may continue as entirely informal groups bound by no bylaws and restricted by no membership requirements other than a common interest in forestry.

In my own opinion this evolution toward smaller working units of the Society will do more to strengthen its influence and participation in state and national affairs than any other development in recent years. Ours is a young profession in the United States. It needs the interest and active participation of its younger members in order to keep up with the constant changes in professional practice.

The Sections have become too large and cumbersome to permit the influence of the younger members to be fully utilized. There is little time for discussion in a meeting of 50 to 100 individuals and what time there is is usually monopolized by the older members. Therefore to many, the Society only meant receiving the JOURNAL OF FORESTRY and attending a meeting once or twice a year where one could listen to some more or less formal papers and visit with old friends in smoky hotel rooms. This was not a sound basis for the further development of a young and vigorous professional Society.

Therefore, I venture to predict that before too many years have passed the Chapters of the S.A.F. will have become its working grass roots units. Even in the larger cities the Sections as now existing will voluntarily become Chapters, using the sectional organizations for holding annual or semiannual meetings for all members of the Society within their boundaries, at which the work of the Chapters can be coordinated, their views on Society affairs be heard, and their needs be presented for consideration of sectional officers from which they can be transmitted to the national Council for consideration and action. After all, there is no good reason why the actions and votes of 70 to 100 Section members, who happen to live in Seattle or Missoula or Albany, and can meet frequently together, should bind the entire membership of a Section.

The Society of American Foresters will remain strong and vigorous in direct ratio to the active participation of all of its members in Society affairs.

The Journal of Forestry

THE JOURNAL OF FORESTRY has become perhaps the most influential, widely distributed technical forestry publication in the world. It is our obligation to maintain its quality and prestige.

But here again we have reached a stage in the development of our profession where the editing and publishing of the JOURNAL, *Forestry News*, and the many other technical publications necessary to keep up with professional needs, have become too onerous a task to be delegated to any single voluntary editor. This has been the case with all other broadly based professional societies.

Even though a qualified voluntary editor-in-chief may yet be found, both he and our small Washington staff must have the help of a professionally experienced managing editor of publications. How soon we may be able to afford such an addition to our staff I do not know, but increased income from advertising in the JOURNAL now appears to be possible if we can secure the cooperation of our members in attracting and holding advertisers. This may eventually provide the needed funds.

Meanwhile the Council is constantly studying ways and means for improving the JOURNAL both in format and contents. Some of these improvements are already evident. More will be attained from time to time.

Membership Qualifications

To no other subject has the present Council devoted more time and study than to the exceedingly involved and controversial matter of Membership Qualifications. It will be further discussed at this meeting.

No entirely satisfactory solution has yet been found. But in the heat of debate on this issue, I hope that you will remember that in the final analysis each application for membership is carefully studied on its merits by a small quali-

fied membership committee of the Council. No set of rules can entirely supplant individual judgment on such matters. And perhaps it will be sounder policy to leave our rules for admission at least flexible enough to permit the application of some degree of such judgment.

Staff, Office Equipment, Quarters

These are all important housekeeping matters, often neglected to the detriment of professional progress.

All are now receiving careful attention. The staff is still inadequate, ill equipped, somewhat underpaid, and poorly housed.

However, better quarters are at last in sight and other deficiencies will be remedied as rapidly as finances permit.

Society Policy

The Society is now entering another period of decision upon national forestry policies which will vitally affect the future of every member. Debates will be heated as the issues go deeply into personal convictions. The Society will be pressed on all sides to take a definite position on some of the issues involved.

Without entering into the merits of any of these questions, I am very strongly of the opinion that a clear-cut decision must be reached concerning broad Society policy.

Do we wish to take a stand for or against specific legislation now before Congress or which may be introduced in Congress during the next few years? Or should we confine our national legislative activities to testimony in favor of certain broad principles of forestry and conservation which vitally concern the progress of our profession and the future well-being of our country? Or should we as a professional organization restrict action on matters of national import to the technical advancement of our profession?

I am well aware that there are sound arguments both pro and con on all three of these suggested lines of action. Hasty or unwise decisions may well gravely affect the future of the Society, and I do not propose to suggest how they should be met. But the Society should have a definite policy on such matters to guide our Washington staff.

We should also have some concrete objectives toward which to work. One of the most important in my judgment would be to create an understanding of the fact that forestry in the United States will advance more rapidly if backed by the cooperative efforts of all individual foresters and all forestry agencies. This is being demonstrated every day in many sections of the country. But if any one group or interest seeks domination over the others, it can only result in bitter controversy and act as a check upon progress.

As my term as president of this organization nears its end, I wish to express my deep appreciation of the universal cooperation and goodwill extended me by all of our members and their sectional officers. It has been a stimulating experience. Association with foresters all over the country renews one's faith in the quality of men attracted to our profession. Foresters cherish high ideals of public service. They grade high as citizens. The more one sees of their often unassuming accomplishments, the prouder he is that he is one of them—a forester. It has been a wonderful experience to serve you to the best of my ability.

I have already mentioned the Council and its work. We must not forget however that the real spade work of maintaining our Society is done by Henry Clepper, Audrey Warren, and our loyal Washington office staff. Presidents and Councils come and go. Each leaves some small imprint of its passage, but the real work of the Society is accomplished by our permanent staff.

Our Society can look toward the future with confidence. A new President and Council will bring new ideas and new energies into the organization. Next year is our 50th anniversary. Let us all help make it a noteworthy year in the progress of forestry and of our great Society.

CLYDE S. MARTIN.

Report of the Council Meeting and Actions Taken

A meeting of the Council was held on October 10 and 13, 1949, in connection with the annual meeting of the Society in Seattle, Wash.

Eight officers and members were present: Clyde S. Martin, president, Charles F. Evans, vice president; Paul M. Dunn, James C. Evenden, William B. Greeley, C. S. Herr, Richard E. McArdle, and DeWitt Nelson. Willis M. Baker, Charles H. Flory, John W. Spencer, and Henry Clepper, executive secretary, were absent.

Miss L. A. Warren and Robert D. Hostetter represented the Washington office.

The following report summarizes the business matters discussed and the actions taken.

Referendum on Membership

Following the discussion by Section delegates, the Council on motion of Col. Greeley, seconded by Mr. Nelson, approved a form of ballot for a referendum on the proposal to liberalize the professional base for membership (the Junior Member grade), and instructed the executive secretary to mail it to the voting membership concurrently with the ballot for the biennial election of officers.

Action on O. & C. Referendum

The Council on motion of Col. Greeley, seconded by Mr. McArdle, instructed the executive secretary to advise by letter the Secretary of the Interior, Secretary of Agriculture, and the chairman and members of the Committee on Interior and Insular Affairs that the Society had by referendum voted disapproval of Section 1 of Senate bill 580 of the 80th Congress (and its successor S. 148 of the 81st Congress) which would transfer to the Department of the Interior the administrative jurisdiction of some 462,000 acres of controverted land, now administered by the Department of Agriculture under agreement between the two departments.

Recommendations of Accrediting Committee

In considering the report of the Committee on Accrediting (published elsewhere in this issue), the Council approved recommendations 1, 5, 6, and 7. Recommendation 2 was tabled until such time as the final committee report is received; similar action was taken on recommendations 3 and 4.

Petition for Referendum

With respect to a petition from a group of members to hold a referendum on federal regulation of private forest management, the Council requested expression of membership opinion at the meeting of Section delegates and at Society Affairs session. The question propounded was: Should the Society hold referenda on specific legislation or on broad principles? Guided by opinions of members present at the annual meeting, the Council on motion of Mr. Evans, seconded by Col. Greeley, established the following policy:

> The Society Council has received a petition from a group of members, which requests a referendum on the principle of federal regulation, as expressed in the pending Anderson Bill, S. 1820.
>
> The Council is opposed to referenda referring to specific legislative proposals. They often include different items which cannot be dealt with by a single overall vote. Furthermore, bills are so frequently amended, from stage to stage, that a referendum may quickly become out of date and be no longer applicable to amended bills or similar bills introduced later.
>
> The Council is convinced that referenda in this field should deal only with basic policies, but they should include sufficient detail to cover adequately the current developments in national discussion and proposed legislation. The Society should determine its attitude on public control of private forest practices in a form more specific than the policy statement adopted in 1941.

It was the consensus of the Council that any explanatory material in the JOURNAL OF FORESTRY, or with the referendum, should emphasize the Society's concern with broad principles and not specific legislation.

In considering the petition as submitted, the Council on motion of Mr. Nelson, seconded by Mr. Evans, instructed the executive secretary to write direct to the petitioners about the discussion at the annual meeting and of the subsequent action of the Council; and to submit to the petitioners a suggested modification of their petition.

Budget for 1950

The Society will close its books for 1949 with a surplus of about $1500. The budget for 1950 as tentatively submitted, and including an addition of $500 to conduct a proposed referendum on public regulation of private forest management, was approved with instructions for a final budget to be prepared, with comments, for Council consideration. Comments, if any, would be returned by Council members to the Washington office.

The proposed budget, though not necessarily in final form, is shown in Table 1 for the information of the membership.

Membership Forms

The Council on motion of Mr. Nelson, seconded by Mr. Evenden, approved in principle a combined application form developed by R. D. Hostetter, assistant executive secretary, to replace the several nomination forms now in use. The final form is to be submitted for approval to the Council Committee on Membership Admissions.

The Council also authorized the executive of-

fice to obtain employment data and other information necessary to maintain current records of each member.

Committee on Policies and Objectives

Upon motion of Col. Greeley, seconded by Dean Dunn, the Council voted to recommend to the incoming Council the establishment of a Committee on Policies and Objectives, the chairman of which would be a Council member, charged with the responsibility of weeding out obsolete policy statements and proposing others in order to develop a comprehensive policy under which the Society can function.

Journal of Forestry

Lacking sufficient funds to employ a paid editor at this time, the Council requested the executive secretary to continue to edit the JOURNAL OF FORESTRY, at least until the next Council meeting when this subject will again be considered.

Lloyd Thorpe, Seattle advertising representative of the JOURNAL OF FORESTRY, appeared before the Council and outlined advertising possibilities for the JOURNAL. He recommended a change in cover and size which, in his opinion, would make the JOURNAL a more attractive and practical advertising medium.

The Council agreed to continue the solicitation of advertising for the JOURNAL, and upon motion of Col. Greeley, seconded by Mr. Nelson, instructed the executive secretary to work out an arrangement for one year with Mr. Thorpe as to fee and commission; to make any change in format deemed advisable; and to submit recommendations on other possible improvements to the Council for further consideration.

Mr. Thorpe's report on advertising possibilities, presented at the Society Affairs Session, is published elsewhere in this issue.

Corresponding Membership

It was called to the attention of the Council by Tom Gill, chairman of the Committee on International Relations, that Corresponding Membership by reasons of its technical educational requirements limits desirable candidates for this grade. He suggests that this handicap could be overcome by removing the citizenship requirement or rephrasing the qualifications of the Associate Member grade. Such a change would require a Constitutional amendment.

TABLE 1.—PROPOSED BUDGET FOR FISCAL YEAR 1950
(December 1, 1949-November 30, 1950)

	Budget 1949	Budget 1950
Expense		
Journal of Forestry	$23,600.00	$25,700.00
Editor's expense	500.00	250.00
Advertising travel	100.00	100.00
Salaries—Executive Secretary and Assistant	12,400.00	12,600.00
Salaries—Office	20,860.00	22,860.00
Travel—Officers	3,000.00	3,000.00
Postage	1,300.00	1,500.00
Telephone and telegram	400.00	520.00
Rent	1,440.00	2,010.00
Multigraph and mimeograph	300.00	500.00
Miscellaneous printing	650.00	800.00
Office supplies	600.00	750.00
General expense	700.00	700.00
Depreciation	350.00	400.00
Pension plan	539.46	539.46
Natural Resources Council	200.00	200.00
Committee expense	150.00	300.00
Grading Forestry Schools[1]	100.00	1,500.00
Annual meeting[2]	850.00	400.00
Contributions	50.00	50.00
Council travel expense	1,250.00	1,250.00
Election of Fellows, officers, and referenda	900.00	500.00
Division expense	50.00	50.00
American Institute of Biological Societies	100.00	100.00
Annual meeting proceedings	1,500.00	—
Reprints, Constitution and bylaws	100.00	—
Membership directory, Constitution and bylaws	1,000.00	3,000.00
Proposed referendum on public regulation	—	500.00
	$72,989.46	$80,079.46
Income		
Dues	$60,000.00	$67,000.00
Fees	3,000.00	3,000.00
Subscriptions and sale of Journals	7,500.00	7,500.00
Advertising (Net)	2,400.00	4,000.00
Interest and dividends	500.00	400.00
Books	500.00	200.00
Reprints	150.00	200.00
Handbook of Information	200.00	—
Miscellaneous income	200.00	150.00
	$74,450.00	$82,450.00
Estimated income		$82,450.00
Estimated expense		80,079.46
Estimated net earnings		$ 2,370.54

[1]The Committee on Accrediting Schools of Forestry has recommended $2500 for accrediting schools. Probably no more than $1500 will be expended during the 1950 fiscal year.

[2]Two national meetings occurred during the fiscal year 1949: at Boston in December 1948 and at Seattle in October 1949.

It was the consensus of the Council that a liberal intrepretation can be made of the Corresponding Member grade by the Council Committee on Membership Admissions, and that the Committee on International Relations should endorse candidates for this grade who, in their opinion, are acceptable on the basis of their forestry experience and responsibilities.

Student Chapters

A petition having been received to establish a student chapter at a forestry school, upon motion of Col. Greeley, seconded by Mr. Evans, the Council instructed the executive secretary to advise the petitioners that the formation of student chapters would be approved under the following conditions:

1. Each petition to form a student chapter must contain the signatures of a minimum of 50 Juniors, Seniors, and graduates.

2. Each petition must have the approval of the forestry faculty.

3. At least five accredited institutions must petition for student chapters.

When these conditions are met and the resulting petitions received, the Council will take steps to amend the Constitution and Bylaws as necessary.

Resolution of the Council in Recognition of the Services of President Martin

"At the conclusion of its term of office the Council, which has been privileged to serve with retiring President Clyde Martin, wishes to express its deep appreciation for his leadership and ability in conducting the affairs of the Society. Mr. Martin brought a fresh and realistic viewpoint to the work of the organization. His numerous personal visits to the Sections, and frequent letters to them about Society problems and the efforts of the Council to solve them, strengthened the morale and unity of our entire membership. This stimulus to the interest and responsibility of all S.A.F. men greatly aided the progress of the past two years.

"The Society has been placed upon a sound financial footing, with higher dues, while continuing its steady and gratifying increase in membership. Many important activities have been carried forward, such as the History of American Forestry, adoption of the Code of Ethics, and the development of local Chapters.

"The members of the Council have felt the lift of strong, steady leadership from our President; and we want to assure him of our great pleasure and satisfaction in serving with him."

THE COUNCIL.

Seattle, Washington.
October 13, 1949.

Increasing Society Revenue Through Journal Advertising

Out of the total estimated income of $74,450 for the current year the Society anticipates a profit of $1,460—slightly more than the amount that will be spent for postage.

Second only to the amount paid out in salaries for the executive secretary and his staff, the JOURNAL is the Society's largest item of expense. Its estimated cost for the year will be $23,600. This is roughly equivalent to one third of the Society's total income, or 40 cents out of every dollar received as dues.

Undoubtedly, in the early days the financial and editorial responsibilities of the JOURNAL were lightly assumed by the Society. In other words, the Society easily wagged the JOURNAL. Now, a half-century later, the JOURNAL has grown into a full fleged professional magazine of 80 pages and a circulation of 7,500 copies and it sems at times that the JOURNAL about wags the Society.

It appears that the Society must decide whether, from here on, the JOURNAL shall continue to ride as a heavy burden on Society income or be put to work as a useful tool for developing new revenue through its advertising potentialities. Current estimated advertising revenue is only $2,400 for the year. My recommendation is that the Society exploit its opportunity intelligently.

Study of the many professional magazines now being published shows that the sale of advertising is a widely accepted practice. By way of example, the American Medical Association, with a membership of some 150,000 licensed physicians, publishes an even dozen magazines and so actively sells advertising that 96 percent of its total operating expense of about $4,700,000 is derived from its publishing enterprises. As an example of a smaller group, the American Society of Agricultural Engineers, with a membership of about 5000, publishes its own magazine, *Agricultural Engineering*, and derives an esti-

mated gross income from advertising of from $25,000 to $30,000 per year.

If the JOURNAL were to sell an equivalent amount of advertising it could be put on a self-supporting basis.

We do not want to sell advertising on the hand-out or stuffed club approach. Foresters use or influence the use of a great variety of equipment, supplies, and services. Many people have such things to sell and it is a legitimate American practice to advertise their wares. The JOURNAL can serve a valuable function of mutual benefit by bringing buyer and seller together.

That more advertising in the JOURNAL will make it a magazine of greater usefulness to the reader is abundantly supported by competent authorities, for advertising in itself is news of developments.

The JOURNAL has valuable assets to sell in its long establishment, in its circulation — now grown to 7,500 and with more growth in prospect, in the fact that it reaches the bulk of America's practicing foresters, because it reaches men moving up in increasing numbers to management level, because it reaches men of an important and specialized profession more directly and in more concentrated form than any other publication in its field.

Why then does JOURNAL advertising revenue amount to only $2,400 per year—about 3 percent of total Society income? It is because in the competitive field of advertising we have been too modest. Advertising must be sold. Selling costs money, but the rewards are worth the risk.

To improve our chances for selling advertising we should:

1. Develop much better market information about foresters—who and where they are, the positions they hold, the kinds and amount of equipment and supplies they use.

2. Make it easy for the advertiser to buy. Our present page size should be enlarged to conform to the widely accepted standard in the field and thus eliminate extra and unnecessary production and engraving expense for the advertiser. Since page size bears no relation to professional standards, why handicap ourselves?

3. We must do more missionary work, for many prospective advertisers either know nothing about the JOURNAL or too little about what it is and the growing importance of the profession it serves. The individual member can help in this missionary work by:

(a) Interesting himself in advertising as a Society effort.

(b) Informing those from whom he buys about the JOURNAL.

(c) Occasionally writing to manufacturers about the JOURNAL.

(d) Informing the JOURNAL what and from whom he buys.

(e) Mentioning the JOURNAL when responding to advertisements.

Such mass missionary work will help a great deal, but the final selling should be delegated to experienced advertising salesmen.

4. The Society should venture the budgeting of some funds, against anticipated increased revenue, for sales promotion expenses.

The JOURNAL has grown up over the years as a side-line job of the Society's staff. Has not the time come to make the JOURNAL a principal function? The Council in June 1948 anticipated that question and made a positive recommendation for "the establishment of a staff office on publications with qualified personnel, as the next major expansion of the annual budget."

In the past few months, through some intensification of selling, but without committing a dime of the current budget, the Society has made modest gains in selling space. There is fair prospect, if selling is continued actively, that total sales can be boosted to $10,000 in 1950 and, in succeeding years, to a self-supporting basis.

In conclusion, we should consider as part of our field the several thousand foresters supposed to be practicing now outside the Society's orbit. By interesting these men firs. as JOURNAL subscribers, we have taken a long step toward signing them up as Society members. Increased circulation into this field will lower publishing unit costs and warrant higher advertising rates.

To attract and hold readers, we should continually advance our editorial standards and keep moving toward the goal. We should keep in constant close touch with the readers, find out what interests them, and deliver, in complete, authoritative and attractive manner, what the members need to know and want to know to keep abreast of their profession. The JOURNAL itself is the final key in attracting and holding readers. The more firmly the JOURNAL grasps the interests of its readers, the better will it attract and hold advertisers.

The Society can well use the added revenue and put it to good use in enlarging its service to the membership and to forestry. The JOURNAL's present advertising income of only $2,400 is a seedling which, by careful nurture, can be developed into sustained yield revenue for the Society. It should be done.

LLOYD THORPE,
Seattle, Wash.

Report of Council of Forestry School Executives

The Council of Forestry School Executives met in conjunction with the annual meeting of the Society of American Foresters at Seattle in October. This was the third meeting since formal organization in 1947. Several meetings of the executives were held prior to that time but the group organized in 1947, and elected Dean Joseph Illick of Syracuse as chairman. J. Lee Deen succeeded him the following year. The Council is composed of executives of twenty-two accredited forestry schools or departments in the United States.

Matters relating to the administration of forestry schools were discussed at the meeting. There was a discussion of testing and rating of forestry school students lead by Dr. F. H. Kauffert of Minnesota, assisted by Dr. E. E. Duceek of Washington University, Dr. W. F. McCullock of the Forestry School of Oregon State and W. C. Percival of West Virginia.

Dr. C. F. Korstian discussed the International Union of Research Organizations.

Dr. K. C. Davis of the University of Michigan lead a discussion of job placement interview forms. He was assisted by Prof. G. B. Hartman of Iowa State College and L. C. Plumley of Syracuse University.

Slight revisions were made in the constitution and bylaws. Henceforth meetings will be held annually instead of biannually and officers will serve for a year instead of two years. It was decided that the meeting should be held in conjunction with, but immediately following, the annual meeting of the Society of American Foresters.

Considerable time was devoted to the accrediting procedure. Discussion was lead by Prof. Myron Krueger of the University of California who is chairman of the Society's accrediting committee.

Officers elected for next year are Lewis M. Turner, Utah State Agricultural College, chairman; Victor Beede, Pennsylvania State College, vice chairman; D. J. Weddell, University of Georgia, secretary.

LEWIS M. TURNER, *Chairman.*

Report of the Committee on International Relations

The ten months since the last report of the Committee on International Relations (December, 1948) have witnessed unusual activity in the international forestry field. More international meetings were held during this period than in any similar length of time.

The most important event, not only of the past year but of the past decade, was the Third World Forestry Congress, held in Helsinki, Finland, July 10-19, 1949, on which a full report appeared in the November issue of the JOURNAL OF FORESTRY. In preparation for this congress, your committee published announcements in the JOURNAL to keep the membership informed of plans for the meetings, and assisted members in their arrangements for attending. The total U.S.A. membership in the congress numbered 34, of whom 19 were Society members. Of the six official U.S. delegates to the congress, four were members.

Your committee also assisted foreign delegates planning to attend the United Nations Scientific Conference on the Conservation and Utilization of Resources, August 17th to September 6th, 1949, at Lake Success, N. Y. Henry Clepper, executive secretary, was the Society's official delegate at this conference, which was attended by over fifty American foresters, and which had been called by the United Nations Economic and Social Council. An account of this conference was published in the November issue of the JOURNAL OF FORESTRY.

H. H. Chapman was the Society's delegate at the seventh meeting of the Pacific Science Congress, held in New Zealand on February 2-22, 1949, and served as chairman of the forestry committee, of which your chairman was secretary. These congresses meet at two to five-year intervals, and the work is carried on by standing committees which function between congress meetings. The next meeting is planned for 1952, in the Philippine Islands, and Stephen N. Wye-

koff, director of the California Forest and Range Experiment Station, has been named chairman of the standing committee on forest resources.

In May, 1949, the first meeting of the Latin American Commission for Forestry and Forest Products of F.A.O. was held in Rio de Janeiro, and was attended by your chairman. The purpose of the meeting was to formulate a work program for the recently established F.A.O. Latin American forestry office with headquarters in Rio de Janeiro.

Your chairman also served as Society representative on a newly organized committee to select recipients for a Latin American *Award of Merit*. This award is for outstanding efforts by Latin Americans on behalf of conservation of natural resources. The committee was organized by the Pan American Union in pursuance of a resolution passed at the Inter-American Conference on Conservation of Natural Resources held in Denver in September, 1948, and funds for the first five years' awards have been made available to the Union by the United Fruit Company. The first award, amounting to $2,000, was made on September 20, 1949, to Enrique Beltran of Mexico.

Future Meetings

The fifth annual conference of the United Nations Food and Agriculture Organization will again be held in Washington, D. C., beginning on November 21, 1949, and probably continuing for a period of three weeks.

Another scheduled meeting of interest to foresters in certain specialties will be the Seventh International Society of Botanists meeting in Stockholm, Sweden, on July 12-20, 1950. A note regarding this meeting will appear in a forthcoming issue of *Forestry News* in the JOURNAL OF FORESTRY. Three forest excursions are included in plans for the congress, and among the sections will be one on experimental ecology, one on forest botany, and one on mycology and bacteria. Raphael Zon, Fellow of the Society of American Foresters, has been named honorary president of this congress.

Still another meeting of special interest to foresters concerned with tropical forestry was proposed by the Third World Forestry Congress, which recommended "That a special international conference of those interested and engaged in tropical forestry be called by F.A.O. as soon as convenient." No date or place has been set for this conference, but the membership will be notified of any announcements made concerning it.

Since its latest report, this committee has acted on several applications for Corresponding Membership in the Society. The members nominated and approved were: Paulo F. Souza (Brazil), Ricardo Tejeda (Mexico), and Flemming G. Junker (Denmark).

During the past few years it has been necessary to disapprove the applications of several outstanding foreigners desiring to join our Society because there exists no classification into which they fit. In one typical instance, a candidate was not eligible for Corresponding Membership because he had not received professional training, nor was he eligible for Associate or Affiliate membership because he was not a U.S. or Canadian citizen. Under our present rules, for example, a former chief forester of France is not eligible for any form of Society membership. It is felt that some classification available for such candidates should be worked out, and a suggested procedure would be to remove the restriction of U.S. or Canadian citizenship from the Associate member category. This suggestion is being laid before the Council.

Requests for relief from foreign foresters have diminished during the past year, but several packages have been sent to western Europe. A small balance still remains in the Foreign Relief Fund, and probably will be used during the next year.

Publications Received

On file in the chairman's office is a complete set of reports issued before and during the Third World Forestry Congress. These include the general papers prepared for presentation at the congress, the full text of several papers, and summaries of all others. Papers presented at the meeting of the F.A.O. Latin American Commission for Forestry and Forest Products are also on file, among them notes on the forestry situation in the following countries: Colombia, French Guiana, Guadeleupe, Martinique, Nicaragua, Paraguay, Uruguay, and Venezuela.

In addition, several documents relating to Brazilian Parana pine have been received, and one volume, by J. W. Gonggryp and D. Burger Hzn, of studies on forestry in Surinam. Vol. 4 of Silvae Orbis, *The Distribution of Arborescent Species in the North Temperate Zone*, by Theodor Schmucker, has also been received and is available for consultation.

TOM GILL, *Chairman*.

Report of the Committee on Civil Service

The Committee on Civil Service reaffirms its recommendation of December 17, 1948 at Boston, namely, that in place of the psychometric test as given for the past two years by the Civil Service Commission, the Society urges the return to a subject matter test, supplemented by a general test, measuring general intelligence, aptitudes, and interests. (Supporting statements will be found in the 1948 report.)

The committee further recommends that the Society urge upon the Civil Service Commission the shortening of the time lapse between the date of the examination, the announcement of results, and the offering of jobs. It seems unnecessary that with the mechanical grading now in effect it should take from January 12 to May 25 to have the results available, and that the job offerings should be delayed accordingly. This delay tends to discourage men who are genuinely interested in federal careers. Before the end of the summer they are seeking other placement, if they have not already secured it.

The committee believes that in the allocating of positions for trained foresters in federal service, a veteran's ten-point preference should not place him otherwise than in his numerical order.

D. J. WEDDELL.
W. C. PERCIVAL.
E. R. MARTELL.
D. S. JEFFERS.
VICTOR BEEDE, *Chairman*

Report of the Collating Committee on Forestry Terminology

The Collating Committee on Forestry Terminology completed the task assigned it. On September 14, it turned over to the executive secretary of the Society, its final product, a completed manuscript. This manuscript is the revised *Forestry Terminology*.

The *Forestry Terminology* was issued by the Society in 1944. This edition soon was exhausted. When the question arose as to whether to reprint the text or first to revise it, the Council decided upon the latter course. The then president of the Society, Shirley W. Allen, appointed a committee, the present one, to undertake the task.

It was first thought that the revision would be a relatively simple undertaking, including chiefly the changes suggested by those who had made comment on the earlier publication. A number of the comments were of such nature, however, that additional work and study were required. This broadened the scope of our efforts to such an extent that the committee requested help from others. They were primarily writers who had published books and papers on various phases of forestry and related activities, but included some who might be considered authorities in specialized fields. This resulted in additional suggestions in all involving several thousand terms requiring considerable added research.

The committee considered every one of the proposed changes, each member commenting as he desired on the various proposals which were unidentified as to source. All the comments were carefully reviewed and evaluated before any change or addition was accepted. The revised terminology as delivered to the secretary, therefore, presents the committee's best judgment.

Just at the close of its activities, the committee learned of the existence of a comparable committee set up for the British Empire. Accordingly, it got in touch with Dr. H. R. Blanford, executive secretary of the Empire Forestry Association who made available to us a working draft of the British manuscript. This last minute addition afforded an opportunity to unify the efforts of the two groups, American and British, and to obtain greater uniformity with respect to our understanding of terms and phrases.

The committee does not claim for itself any occult powers as to what terms should or should not be accepted, revised, or rejected. It has endeavored to follow out the charter given us as conscientiously as it could, to use its best judgments, and to do a thorough and painstaking job. The preparation of this work has been a difficult task and a time consuming one. The committee, however, will feel repaid if its efforts meet with anything like the acclaim that was afforded the first edition prepared under the leadership of Prof. Ralph Hawley of Yale University.

The manuscript of this revised terminology will be published by the Society and in due course become available to its members.

There undoubtedly will be many comments and criticisms from the Society membership and from others on this revision. Any favorable com-

ment should go to the members of the committee; all of the criticisms should go to the chairman who accepts them as his responsibility. Suggestions for further revision should be sent to the executive secretary.

The active work of the committee has now been finished. It is recommended therefore, that it be discharged from further responsibility.

It is recommended that the executive secretary maintain an active file of all suggestions and comment on *Forestry Terminology*. Into it from time to time, should go further reference to this text and all such related material. Each year the secretary should be required to bring the matter to the attention of the Council merely as a device to keep the file active. At some appropriate time, perhaps in another five years or even longer, the Council could well consider the advisability of further revision.

It is recommended that the volume be of a size similar to text books, rather than of the size of the first edition.

ALBERT ARNST.
S. L. FROST.
R. C. HALL.
R. C. HAWLEY.
E. N. MUNNS, *Chairman*.

Report of the Committee on Graduate Instruction in Forestry

The Committee on Graduate Instruction in Forestry was appointed a little over a year ago in response to a motion passed by the Division of Education at the 1947 annual meeting and subsequently approved by the Council.

At the 1947 meeting, Dr. Clarence Korstian indicated the need for a study of graduate work in our schools and defined in a broad way the objectives of such a study, namely: the determination of the present status and probable future demand for graduate studies and means of maintaining adequate standards for the higher degrees in forestry. The committee has accepted these objectives as a basis for initiating its work and has taken for its first specific project an appraisal of the present status of graduate work.

On August 30, 1949, the committee sent to all the institutions giving instruction in forestry a rather complete questionnaire requesting information necessary to make an appraisal of the current status of graduate work in forestry in the United States. The questionnaire was modeled after that used by the U. S. Office of Education and the Society for the Promotion of Engineering Education which conducted a similar study of engineering graduate work that was reported upon in 1936. A copy of this questionnaire along with instructions and letter of submittal may be obtained from the chairman.

As of October 7, completed questionnaires had been received from 13 of the schools. Ten of the 22 accredited schools have not yet sent in their questionnaire, hence it has not been possible to begin any compilation of this information. It is hoped that within a short time all the schools will have reported so that the committee can proceed with the preparation of a report on the present graduate study situation.

J. S. BOYCE.
W. W. CHASE.
V. L. HARPER.
C. F. KORSTIAN.
O. H. SCHRADER.
R. A. COCKRELL, *Chairman*.

Report of the Committee on the History of Forestry

Your committee chairman reports that on October 5 the manuscript for the "History" was turned over to Henry Clepper for review and for submission to the publisher. It should be released for public sale at the 1950 annual meeting of the Society.

The chairman expresses his appreciation for the loyal, wholehearted support of the committee members and for the patient, thorough effort of the chapter authors. Many reviewers also deserve a word of appreciation. To these and to all others who have contributed to the work of the committee during the past four years, the chairman here publicly says "Thank you."

HUGH P. BAKER.
E. H. FROTHINGHAM.
WM. L. HALL.
RALPH S. HOSMER.
S. BLAIR HUTCHISON.
L. F. KELLOGG.
J. P. KINNEY.
ROBERT K. WINTERS, *Chairman*.

Report of the Committee on Library of Congress Photographs Collection

Over 800 photographs of foresters have been received by the Library of Congress Collection of Photographs. These have been recorded and filed by Dr. T. S. Palmer, a Society member, at the Library of Congress. The photographs have been designated as the Pinchot Collection.

During the past year the committee has devoted its primary effort toward obtaining photographs of all state foresters, past and present, with considerable success.

The collection as yet represents only a small percentage of the total number of foresters—even of those who are members of our Society. To increase the representation, individual cooperation is essential. Every forester is asked to send in his photograph and the required biographical information which includes full name, date of birth, place of birth, and present occupation.

The Sections have done good work in obtaining photographs of their members and have been mainly responsible for building the collection to its present size. Their continued cooperation is urged. Forms for recording biographical data are available at the Society office.

Increased use of the Pinchot Collection of Foresters' Photographs indicates its value as a Society project to be carried forward by all members.

HELMUTH BAY, *Chairman.*

Report of the Committee on Accrediting Schools of Forestry

TO THE COUNCIL:

At the 1948 annual meeting the Committee on Accrediting reported six steps to be followed by the committee in preparation for the 1950-1951 reaccrediting. These six items have been carried out. However, inasmuch as the plan of accrediting adopted by the committee was not submitted to the heads of forestry schools until September 21, 1949, the committee does not have a final revision of "Standards for Grading" to incorporate in this report. The final revision will be submitted to the Council at an early date.

The committee has held two meetings, one of three hours in conjunction with the December 1948 annual meeting of the Society in Boston, and one of three days at Ft. Collins, Colorado, in August 1949. Out of these meetings and much correspondence has arrived the plan of accrediting which was submitted to the heads of forestry schools by mail on September 21, 1949, and which was discussed thoroughly in the meeting of the Council of Forestry School Executives on October 10.

Copies of this plan were mailed to the members of the Council. Even though many minor but strengthening corrections were made by the Council of Forestry School Executives, the plan was approved with a minority report on only one item—that on faculty salaries. The majority think that salaries should be expressed in amounts applicable throughout the nation. Three of the twenty-two school representatives present expressed a desire that the school be given full credit if the salary scale of the forestry faculty is equal the scale for other departments of the institution.

Incidental to its deliberations on a plan of accrediting, the committee has of necessity set up certain rules to guide its actions. These are covered in the recommendations below.

Recommendations

The committee recommends that the Council adopt the following:

1. That no schools be considered for accredited or "listed" status until the general accrediting of 1950-1951.

2. That the Council abolish the grade of "listed." This will leave only two grades, accredited and nonaccredited.

3. That the Committee on Accrediting be given the option of recommending that border line accredited schools be given a rating of "provisionally accredited." This rating shall be known only to the Committee on Accrediting, the members of the Council, and the officers of the institution affected. Provisionally accredited schools must correct certain weaknesses within two years or revert to nonaccredited status.

4. That, after accrediting is completed, there shall be no publication of the relative standing of accredited schools.

5. That the Committee on Accrediting shall not be used as an agency to correct maladjustments in personnel within an institution. It is recognized that such maladjustments may result in conditions which would eventually cause an institution to lose its accredited status, but any corrective efforts should be exercised preferably by influential members of the Society, acting

as individuals, rather than through official acts of the Society.

6. That the Council adopt the statement on membership recommended to the Council by the Committee on Accrediting in December 1948 and as modified by the committee in its communication of September 20, 1949, a copy of which is attached hereto.

7. That the Council authorize the expenditure by the Committee on Accrediting of $2500 during the biennium 1950-1951.

J. LEE DEEN.
PAUL A. HERBERT.
WALTER H. MEYER.
ROY B. THOMSON.
MYRON KRUEGER, *Chairman.*

Statement on Eligibility to Membership

TO THE COUNCIL:

Pending a Society referendum on the subject, the Committee on Accrediting Schools of Forestry recommends the adoption of the following:

To be eligible for membership in the Society of American Foresters immediately following graduation, the individual must have graduated from an accredited school of forestry in a curriculum with the following required professional courses:

Silviculture	3 semester units
Based on	
Ecology	3 semester units
Botany, Plant physiology, Dendrology	6 semester units
Soils	3 semester units
Protection (fire, insects, or disease)	3 semester units
Management	3 semester units
Based on	
Mensuration	3 semester units
Surveying	3 semester units
Mathematics	through trigonometry
Economics	3 semester units
Based on	
General economics	3 semester units
Utilization	3 semester units

In examining a curriculum, the main objective should be to verify that the individual has had a reasonable amount of formal instruction in each of the five fields and that each field is suitably grounded in the basic sciences.

If this be the case, then no penalty should be exacted because the individual lacks somewhat from the requirements as expressed in terms of semester units. On the other hand, lacking adequate coverage in the basic courses, the curriculum should provide approximately equal time in the professional courses.

J. LEE DEAN,
P. A. HERBERT,
WALTER MEYER,
R. B. THOMSON,
MYRON KRUEGER, *Chairman.*

Report of the Committee on Community Forests

Since the recommendations of this committee were presented and adopted at the Boston meeting last year, it has been active in trying to carry them out. Its work has been done more as individuals than as a committee, because of the necessity of carrying on business by correspondence.

The committee has relied on the U. S. Forest Service for the collection of data on the national scale, and as George Duthie, who had charge of the work for many years, retired in 1949, reports have been received from only ten states. The increase in community forests for those states was 91, bringing the grand total to 3,204. There was a decrease in the total acreage, because some areas formerly in community forests were taken over by the states as state forests. The present known acreage in community forests is 4,369,650.

The states in which interest is most active at present are Ohio, Florida, Michigan, Massachusetts, Minnesota, and Pennsylvania. The chief interest now seems to be in school and watershed forests.

Our recommendation that the American Forestry Association take the leadership in the preparation of a bulletin on the subject, to be used by organizations throughout the country, may have influenced that organization to call a meeting of executive secretaries of state forestry associations, at which an organization of these executives was formed. The community forest movement was discussed at that meeting.

The New York Section has appointed a committee on community forests; the Florida Forests and Park Association adopted the subject as

one of its regular projects; and the Massachusetts Forest and Park Association engaged a forester this year to make a survey of the present town forests. It is planning to publish a report on that survey.

Your committee believes that every Section of the Society should have a standing committee on community forests, and so recommends. It again recommends that more space in the JOURNAL should be allotted to this subject.

NELSON C. BROWN.
GEORGE A. DUTHIE.
CHARLES A. GELTZ.
E. V. JOTTER.
G. S. MCINTIRE.
PAUL W. SCHOEN.
WILLIAM SYLVESTER.
HARRIS A. REYNOLDS, *Chairman.*

Report of Joint Committee on Equipment Development

A meeting of the Joint Committee on Equipment Development of the Society of American Foresters and the American Society of Mechanical Engineers was held in Peoria, Ill., October 4 and 5.

The regular members present for the meeting consisted of A. A. Brown, Gilbert I. Stewart, W. E. McCraw, I. C. Funk, and R. B. Sargent. Robert Hostetter, representing the executive office of the Society of American Foresters, also attended throughout, and Russell Williams of the Caterpillar Tractor Company, who is on the Spark Arrestor Committee of the S.A.E., attended a part of the sessions.

Mr. McCraw and the Caterpillar Tractor Company acted as hosts and provided a meeting room. Though the schedule was modified, the topics discussed followed the agenda which had been circulated in advance of the meeting. The status of each of the topics discussed will be reviewed briefly by captions.

Spark Arrestor Specifications

Russell Williams, assistant director of research, Caterpillar Tractor Company, who is a member of the S.A.E. Spark Arrestor Committee, made a report for the information of the group.

He said the S.A.E. Spark Arrestor Committee had come to the conclusion that it would be desirable to eliminate flame arrestor requirements from the specification and restrict the requirement to that of arresting fire causing carbon sparks only. He stated that they had found that, when the condition of the motor is such that it uses excessive oil and lubricating oil residue is incorporated in the exhaust carbon, carbon particles then burn longer and stay hotter than the normal carbon when an engine is in good condition. This and the fact that most arrestors must be periodically cleaned to be effective show that the mere installation of an approved arrestor may give the operator of poorly maintained equipment a false sense of safety.

A further meeting of the S.A.E. Committee will be held in November and a special request was made to Mr. Williams to expedite action on this matter.

Light Power Fire-line Building Equipment

Spiral Trencher

Mr. Funk of the Forest Service reported briefly on the field tests now in progress and of the test models of the light spiral trencher that are now being tested in California. Reports so far are very favorable, although the need of several minor changes has already become apparent. The men working with this trencher believe that it will have very good possibilities for fire-line work over wide areas in the West.

Jeep Plow Developments

Mr. Stewart discussed the tests with jeeps that have been organized on a cooperative basis between the state and Forest Service in Michigan. Tests of the jeep for all purposes are involved. He said that the particular advantages of a jeep for reconnaissance purposes are already well established and do not need any special demonstration.

However, use of the jeep as a tanker or as tractive power for a plow does require systematic tests to determine the most efficient combinations and the mechanical limitations that must be observed. As a tanker-pumper outfit, the jeep offers the advantage of greater maneuverability than the power wagon and better ability to dodge obstacles. Successful pumping units for jeeps can be designed for slow speed power take-off from the rear or as independent units mounted either on the jeep or on a trailer. The best combination remains to be demonstrated, though its value as a tank-carrying truck is already proved.

As a plowing unit, the jeep has some limitations because of its design. There is no armor on the commercial design, yet armor is essential for use in the woods. Specifications for armoring are urgent for this reason. Turning radii to the right and left are often critical to its ability to get through and the size of tree it can push down is important too. In Michigan the jeep can push down 4" aspen and pine trees but not oak. The power wagon can push down trees up to 5". There are many variations by species and soil. Consequently, there are some stands where the jeep can not get through. This needs to be taken into account in planning for jeeps in fire control operations.

Draw bar pull tests are critical in fixing the limitations. On a paved road surface preliminary draw bar pull tests gave a maximum of 2,850 lbs. This drops very sharply in loose ground in the woods to 1300-1400 lbs. Requirements of most plows exceed this. It looks as if the type of cover and terrain adapted to jeep operations will need to be carefully defined in order to establish the potential value of this equipment in any given locality.

Mr. Stewart's discussion of what it takes to do a good job of planning and executing conclusive field tests of fire equipment and of determining the specifications needed was so well presented and was so basic in concept that it won the admiration of all present. The equipment wisdom displayed deserves a larger audience and he has been requested to prepare articles both for Fire Control Notes and for formal presentation at the 1950 ASME meeting.

Water and Wetting Agent Study

Mr. Brown brought this subject up to date briefly and stated that encouraging progress had been made in field tests this summer in developing techniques of application which considerably increase the value of wetting agent solutions under field conditions. A progress report on this work will become available this winter.

Portable Pumper Classification

Mr. Sargent reported at some length on his proposal for establishing a standard procedure and form for rating fire pumpers and asked for the sponsorship of the committee. The committee agreed that the proposal was ready for review by the fire pump manufacturers and agreed that this would be the proper next step. Following that, it will be referred to the various protection agencies for their review.

New Developments in Earth-moving Equipment

Mr. McCraw stated that there are no revolutionary things in tractor equipment at the present stage but that one new development they are now testing should be of interest to protection agencies. This is a so-called floating tool bar for use with a Caterpillar tractor that will give better balance and greater convenience in pulling various equipment behind the tractor. He stated that the tool bar is well adapted to use in jeep plow combinations or other fire-line plows.

The Caterpillar Plant

A tour through the Caterpillar Plant which now has a pay roll of 23,000 people was conducted on the afternoon of October 5. The training and apprenticeship programs, the manner in which they organize their research work, and similar matters competed strongly with the mechanics of making tractors in the interest of committee members.

Fire Hose

In the absence of Mr. Flounders, nothing new was reported on fire hose developments.

Function and Organization of Committee

There was considerable discussion of the best function and organization of the committee to accomplish the objectives for which it has been established. A list of objectives had been prepared by Mr. Funk which were favorably received. These are repeated below:

1. Determine fire equipment needs of forest protection agencies on a nation-wide basis.
2. Promote development and production of needed items and evaluate results.
3. Coordinate efforts of industry, state, private, and federal forest protection agencies in research and development of forest fire equipment.
4. Promote the development and adoption of items and specifications as standard on a national basis.
5. Promote the development and adoption of standard testing and rating methods on forest fire equipment.
6. Promote the collection and publication of information on forest fire equipment.

7. Promote adequate financing of fire equipment development programs.

8. Promote the interest and training of young men in the engineering phases of fire protection and fire equipment development.

In addition, Mr. Hostetter had prepared a list of functions and services that he believed the committee should undertake. These extend slightly beyond the fire control field but all are pertinent. These are repeated for reference of the committee members:

1. Act as a clearing house of information for forest protection developments.
   a. Fire (pumpers, hose, trenchers, etc.).
   b. Insects (pumpers, spraying devices).
   c. Disease (salvage equipment).
   d. Mechanical logging damage—erosion caused by skid roads, bruised trees, friction fires.

Obtain information from all federal agencies, states, and private operators. (Methods of preparing improved pasture fire breaks, use of airplanes, fire tool kit for company supervisory personnel cars.) Disseminate information through JOURNAL OF FORESTRY, Fire Control Notes, state periodicals, company organs.

2. Develop standards to be followed in construction and use of forest protection equipment: flame arrestors, pumpers, plows, etc.

3. Coordinate research in development of equipment.

4. Guide the development of equipment.
   a. Determine need.
   b. Write, as definitely as possible, the requirements for a new or modified type of equipment.
   c. Inform those capable of developing the equipment of the needs and suggested solutions.
   d. Review progress.
   e. Evaluate results.
   f. Promote adoption of new equipment.

5. Review material on forest protection equipment that is being presented at forestry schools.

1. Suggest revisions.

2. Prepare periodic outlines showing which piece(s) of equipment is (are) best fitted to do a particular job in a particular cover type.

3. Issue instructions on the proper use of recently developed equipment or materials such as detergents or insecticides.

Joint meeting of S.A.F.-A.S.M.E. Committee on Forest Fire Equipment held at Peoria, Ill., on October 4-5, 1949.
Seated, *L* to *R*—R. B. Sargent, Gilbert I. Stewart, A. A. Brown, Ira C. Funk.
Standing, *L* to *R*—R. D. Hostetter, Russell Williams, W. E. McCraw.

4. Assist schools in scheduling demonstrations of fire equipment or in obtaining display models.

6. Rate the relative capacities of present equipment.

a. Pumps: portable, semi-portable, integral units on trucks.

b. Hose.

c. Spark arrestors, etc.

7. Urge the establishment of S.A.F. committees as functional units of subject divisions rather than units in themselves. Promote the establishment of a forest protection division in the S.A.F.

8. Radio.

One particular point that was brought out in the discussion was the need of a fire protection division within the Society of American Foresters in order to preserve the most effective liaison with the Society. It was agreed that the need and feasibility of organizing a protection division would be explored in the near future.

Within A.S.M.E., Mr. Sargent brought to attention the need of counseling service to young, mechanical engineers who are particularly interested in the forest protection field. He also called attention to the need for more publications suitable for use by the A.S.M.E.

The necessity of more contact with and more direct representation of the various protection agencies in order to accomplish some of the desirable functions of the committee were discussed at some length. It was believed particularly desirable to strengthen the contact with state foresters, and it was agreed that an invitation would be extended to the Association of State Foresters to designate a special member to serve on the committee. A similar question was raised as to the desirability of expanding the representation of industrial foresters, and it was agreed to refer this question to Mr. Cowan who had been unable to attend the meeting.

Mr. Funk called attention to a letter from F. F. Wangaard, secretary of the A.S.M.E., announcing that a joint paper by Stewart and Flounders would be presented at the annual meeting of the A.S.M.E. in New York on November 27. Mr. Sargent proposed that a paper by Stewart be definitely planned for December 1950. Mr. Stewart believes this would be possible, and the proposal was sponsored by all members present.

The exceptional courtesies extended to the group by the Caterpillar Plant were very much appreciated by the committee.

It was agreed that the next meeting should be held not later than early spring but no specific proposals were decided on.

C. S. COWAN.
GILBERT I. STEWART.
W. E. MCCRAW.
A. A. BROWN, S.A.F. *Chairman, Forest Protection Committee.*
HORATIO BOND.
J. M. FLOUNDERS.
HUGH N. MCNAIR.
R. B. SARGENT.
IRA C. FUNK, A.S.M.E. *Chairman, Forest Protection Committee.*

Report of the Committee on Standardization of Grades of Forest Planting Stock

The project, Standardization of Grades of Forest Planting Stock, undertaken by this Society, has been actively underway for three years.

Its major objective is to establish more reliable specifications for describing and grading planting stock, so that planting technicians and nurserymen may speak a common language; so that the forester on the planting site can convey to the grower of his stock what he wants for best results on a given area and for a given purpose.

It may be surprising to hear that we have this problem after a half-century of forest planting experience. The reasons are (1) nurseries have become highly centralized, serving larger territories with a wider range of conditions, (2) there is a greater interchange of stock between planting agencies and more stock is being grown under contract, and (3) changing conditions within established nurseries are reflected in changes of the quality of the stock grown there.

It was rather simple to exercise the necessary controls when stock was grown in a small local nursery for a specific job. Through tests of various kinds, the planting technician learned that stock of certain specifications invariably survived the shock of field planting better than others. To simplify matters, these specifications were then interpreted in age classes. The planting technician merely asked the nurseryman to grow 1-2 white pine transplants, or 1-year-old green ash whips, knowing

that in those age classes, in that particular nursery, he would get the largest percentage of plants meeting his predetermined specifications and stock best suited to meet his planting problems. Although still in common usage, such indefinite standards have little value today. Actually what we are after are the stable, reliable factors such as caliper, top-root ratio, thriftness, etc., much of which were at one time or another determined but later dropped by the wayside in favor of the loose terms often used today.

The second objective deals with recommendations for safe standards associated with producing forest tree planting stock to meet specified grades but not apparent in the condition of the small trees themselves, such as suitable seed source, freedom from danger of spreading insects and diseases, and discouraging certain practices in nursery operations that would tend to weaken the stock.

There are six regional committees for this undertaking, covering the United States and Canada. The members represent all forest tree planting effort in both the commercial and governmental fields. A small collating committee serves to integrate the work of the regional committees.

Progress has appeared slow. To a large degree this is to be expected in so ambitious an undertaking dependent solely upon contributed efforts of the committee members. Integrating the work between committees so widely scattered and also rounding up the material within the regional committees is quite an unwieldy job, particularly since all must be handled by correspondence. And, no doubt, I have been inadequate to the job of spurring on the efforts of the whole group.

However, we have reached a point where measurable progress in the future will be more rapid. Three of the committees have submitted their preliminary report, copies of which have been distributed to all members working on the project. An unusually good and complete report has recently been received from the committee representing the North Atlantic states. Distribution of it has been withheld pending some changes desired by subcommittee Chairman A. C. McIntyre. With these four preliminary reports in the hands of all regional committees, it seems certain there will be sufficient data and ideas exchanged to clarify many of the troublesome issues and establish a trend that can be more easily followed; and, I hope, bring about a more definite response from the two committees that are lagging.

The next phase will be that of integrating the regional committee reports by the collating committee. It may be desirable to start that with only the four reports now on hand. I am hoping this phase can be completed by next July. After that it should be a relatively simple matter for the regional committees to fill in the gaps and strengthen the weak spots.

DAVID S. OLSON,
Chairman, Collating Committee.

Division of Wildlife Management

The following officers of the Division of Forest-Wildlife Management were elected at the Division meeting held October 12 in Seattle.

Chairman, F. P. Cronemiller, U. S. Forest Service, San Francisco 11, Calif.

Vice chairman, Warren Chase, School of Forestry and Conservation, University of Michigan, Ann Arbor, Mich.

Secretary, Ralph R. Hill, U. S. Forest Service, Denver 2, Colo.

Additional members of the Executive Committee: William L. Webb, New York State College of Forestry, Syracuse 10, N. Y.; and Lee Yeager, U. S. Fish and Wildlife Service, Ft. Collins, Colo.

Meeting of Division of Education

In the absence of Dean Marckworth, the meeting of the Division of Education was called to order by Dean Paul Dunn on October 12 in Seattle.

A. M. Sowder, extension forester, U. S. Department of Agriculture, presented the first paper of the morning, "Farm Forestry Education."

J. Lee Deen in the second paper gave his impressions of the forestry schools of Europe as he saw them on his trip last spring. With the exception of the Finnish and Swedish schools, the speaker was not impressed.

L. M. Turner presented statistics on the "Prediction of Success of Forestry Students in Civil Service Examinations."

Following Dean Turner's paper, a round table discussion of current problems was held. The group encouraged further issues of the annual

forestry school statistics by C. H. Guise, or if he wishes to discontinue the work when he retires, to encourage someone else to do the job.

The question of the proper type of forms to be used by the schools and the Forest Service in getting information on students was referred to the Division of Education by the Council of Forestry School Executives.

The question of compiling titles of theses from all schools of forestry was discussed. At one time this was done by Oregon State. The offer from the College of Forestry at the University of Washington to compile titles of all graduate school forestry theses was accepted by vote of the members present.

The time of meeting was discussed. By vote the group requests authority from the Council to schedule the Division meeting in advance of regular sessions. It was reported that the Division of Silviculture wants a joint meeting, but if the above action is approved by the Council, there will be no need for the joint meeting.

Dean Dunn reported for the Nominating Committee, and the group approved the recommended action of this committee that the policy of non-succession of officers be adopted.

The following slate of officers was elected:

Chairman, Robert I. Ashman, University of Maine, Orono.

Vice chairman, R. H. Westveld, University of Missouri, Columbia.

Secretary, G. B. Hartman, Iowa State College, Ames.

D. J. WEDDELL, *Secretary*.

Division of Forest Products

About one hundred members attended the meeting of the Division of Forest Products at Seattle on October 12, and 75 made the afternoon trip to the boat shop at Bremerton Navy Yard.

Officers elected for the coming year are as follows:

Chairman, Roy M. Carter, Department of Forestry, North Carolina State College, Raleigh, N. C.

Vice chairman, L. N. Ericksen, California Forest and Range Experiment Station, Berkeley 4, Calif.

Secretary, Fred E. Dickinson, Yale School of Forestry, 205 Prospect Street, New Haven 11, Conn.

Report of the Division of Silviculture

Chairman Philip C. Wakeley called the meeting of the Division of Silviculture to order at 9 a.m. on October 12, in Seattle.

The morning program was a full one and the speakers were cooperative in holding their papers to the specified time limit. A brief review of the speakers and their fields is as follows: two papers on the silvicultural problems of the Appalachians, the first by D. J. Weddell, and the second by Kenneth B. Pomeroy and N. T. Barron; two papers on the Northern Rocky Mountain area, the first on beetle damage by Arthur L. Nelson, and the second on tree sampling by Donald W. Lynch; two papers on Douglas-fir silviculture, one by Thornton T. Munger and the other by Leo A. Isaac; a paper by Denson H. Paul on effect of site quality on the wood quality of second-growth Douglas-fir; three papers on Douglas-fir forest soils by T. B. Plair, Stanley Gessel, and Richard F. Tarrant. All the papers stimulated interesting discussions though the limited time prevented adequate development of many issues.

The Ponderosa Pine Symposium in the afternoon with F. S. Baker as moderator was a leisurely functional development of ponderosa silviculture. The introduction was given by Harold Weaver, reproduction by George Meagher, growth by Philip A. Briegleb, insect problems by F. Paul Keen, and financial problems by Thomas J. Orr, Jr. Numerous questions from the floor, directed at all the panel members, brought out several high lights on the changing habits of insects, possible uses of fire in controlling reproduction, and effect of residual volume changes on growth rates.

The Division business meeting contained the following:

1. Reports of various committees:

(a) No report from Committee on Forest Practices.

(b) Report of Committee on Technical Procedures and Standards: F. H. Eyre, chairman. Subcommittee reports on "Planning and Statistical Procedures" read by P. A. Briegleb, and "Planning of Silvicultural Research" read by Fred G. Wilson. Subcommittee consisted of Henry W. Anderson, W. C. Bramble, T. D. Stevens and J. H. Buell, Chairman.

The members voted acceptance of the reports and extended a note of appreciation to the committee for its work.

(c) Report of Committee on Natural Areas. A proposed agenda of activities was submitted by John F. Shanklin, Chairman, and read by the Secretary. The letter of transmittal indicated that a report is planned for the 1950 meeting. The Committee has been attached to the Division by vote of the Council.

2. The secretary read the Boston minutes and presented two bills for postage by Chairman Wakeley and Secretary Daniel. The minutes and bills were approved. The Division membership was announced as being 173.

3. New business. Dean Korstian raised the question as to whether the present number of officers and the policy of succession in office were in the best interest of the Division. After some discussion, he moved that the incoming chairman appoint a committee to study, proposed changes of bylaws to be brought before the next meeting; proposed changes to be circulated to the whole Division for vote previous to the meeting. The motion was seconded and passed.

4. Election of Officers. The vote by the Division members present elected F. S. Baker, dean of the School of Forestry, University of California, Berkeley, Calif. as secretary for 1950. Under the present bylaws, the vote made T. W. Daniel chairman, and P. C. Wakeley past chairman for 1950.

5. The officers extended an invitation to the Division of Private Forestry to hold a joint half-day session in 1951 when it is expected the annual meeting will be in the South. It was suggested that a joint session be sponsored with either the Division of Economics or the Division of Education in 1950.

The officers expressed appreciation for the projector, screen, speech recorder and operator generously supplied by the University of Washington's Visual Aids Department.

T. W. DANIEL, *Secretary.*

Division of Private Forestry

The following officers of the Division of Private Forestry were elected at the Division meeting held October 12 in Seattle.

Chairman, Earl Porter, International Paper Company, Mobile, Ala.

Vice chairman, M. H. Collet, West Virginia Pulp and Paper Company, 230 Park Avenue, New York, N. Y.

Secretary, N. T. Barron, Camp Manufacturing Company, Franklin, Va.

Additional members of the Executive Committee: George Amidon, Minn.; Karl Swenning, Mass.; and George Drake, Wash.

Report of the Division of Public Relations

The meeting of the Public Relations Division was held in the Olympic Hotel, Seattle, on October 12. During the session 45 men were in attendance from eight states and one each from Washington, D. C., Victoria, B. C., and Norway.

In the absence of Chairman S. L. Frost, Vice Chairman John C. Kuhns presided. A letter from Mr. Frost was read in which he stated he hoped to have a committee to work on a Public Relations Forestry Handbook and that a manuscript prepared by Harry D. Thorn presented good possibilities.

Arthur W. Priaulx was then introduced to the group and gave his paper on "The Story of Keep Green." Following Mr. Priaulx's paper, there was a number of questions and answers on the Keep Oregon Green program, followed by a forty-five-minute discussion.

The forum "How Can We Get More Tolerance in Forestry Public Relations?" was opened by John C. Kuhns, who served as discussion leader, assisted by Dean Jeffers and Washington State Forester Orell. Mr. Kuhns pointed out that the discussion of the Keep Green program had demonstrated that foresters could and did work together to attain common objectives in fire prevention; that there are many other objectives which foresters everywhere have in common, such as keeping forest land productive. However, we tend to distract the public interest in the things we all want, by emphasizing in public the points on which we do not agree. Let's center our thinking on ways in which the Society of American Foresters can promote unification and coordination in working for common objectives. He said that when foresters, using the same basic facts, argue in public about public controls, forest growths and sustained yield, people become confused and tend to lose confidence in our profession.

The following resolution was passed:

That a committee of the Public Relations Division of the Society of American Foresters be appointed whose duties will be to make a study of the following phases of public relations and report its findings to the Public Relations Division together with recommendations for an action program to be submitted to the Society of American Foresters:

1. Educating the public relative to forestry—the situation, problems and solutions. How to get facts to the public in language that the layman can understand. How to reach common agreement among federal, state and private foresters as to basic facts to be presented to the public.

2. Keeping key individuals and groups such as news-

papermen, free lance writers, and conservation groups correctly informed as to these basic facts and common objectives on which foresters are united in desiring action.

3. Inculcating in the Society members a better understanding and appreciation of the value of the use of basic public relations principles, techniques and methods in educating the public and in getting public appreciation of the importance of forestry locally, nationally and internationally.

The following committee was appointed:
Albert Arnst, chairman, Tacoma, Wash.
Charles S. Cowan, Seattle, Wash.
Wm. S. Swingler, Philadelphia, Pa.
James C. McClellan, Washington, D. C.
Albert Wiesendanger, Salem, Ore.
Charles L. Tebbe, Missoula, Mont.

Albert Arnst read an address, "The Place of the Public Relations Division in the Work of the Society."

The minutes of the December 16, 1948 meeting of the Division were read and approved.

The report of the nominating committee, consisting of Dana Parkinson, Ovid Butler, and Charles A. Gillett, was read and the committee's nominees were unanimously elected:

Chairman, Floyd E. Carlson, New York State College of Forestry, Syracuse University, Syracuse 10, N. Y.

Vice chairman, J. H. Kitchens, Jr., Louisiana Forestry Commission, Baton Rouge, La.

Secretary, Albert Arnst, Department of Public Information, Weyerhaeuser Timber Company, Tacoma 1, Wash.

JOHN C. KUHNS,
Acting Chairman.
ALBERT K. WIESENDANGER,
Acting Secretary.

Report of Division of Forest Recreation

A meeting of the Division of Forest Recreation was held October 12 in Seattle. Three of the Division officers were present: J. V. K. Wagar, chairman; M. H. Wolff, vice chairman; and James H. Tyndall, secretary.

Attendance totalled 50. Registration cards were distributed to solicit suggestions for work and to discover dominant interests of those present.

C. Frank Brockman, College of Forestry, University of Washington, read a paper entitled, "Coordination of Multiple Recreation Administration on Forest Lands." He mentioned the great need for having all areas with recreation value clearly defined and managed accordingly.

Fred W. Cleator, Parks and Recreation Commission, Olympia, Wash. in his paper, "Recreation Problems Inherited from the C.C.C. in the Pacific Northwest," discussed the magnitude of the maintenance problem for C.C.C. structures after a decade of deterioration.

William N. Parke, U. S. Forest Service, Portland, Ore., presented the paper, "Recent Experiments in Administering and Charging for Camping and Picnicking Privileges in the National Forests." For most areas the reports show that fees collected will barely pay for additional help entailed. However, many people return to charge areas because they are better maintained.

In his paper, "Can the Public be Taught Nondestructive Nature Appreciation?" H. L. Bill, Mount Rainier National Park, said, "The answer is 'yes'." He emphasized need for "Do it here" signs as against the often useless "Do not" signs.

In Shirley W. Allen's absence his paper on, "The Objectives, Procedures, and Status of the National Recreation Policies Committee," was read by James Tyndall. He solicited suggestions from members of the Division of Forest Recreation.

The last paper was presented by Olaus J. Murie, Wilderness Society, Moose, Wyo., on "The Defense of Forest Recreation Areas Against Overambitious Irrigation, Flood Control, and Water Power Projects." Dr. Murie stated that most problems which have arisen regarding the infringement on wilderness areas are due to lack of sympathetic cooperation and consultation between various agencies involved.

A very lively and interesting discussion followed each paper, and only the tightness of the program schedule prevented the meeting from lasting far beyond the time allotted. Chief Forester Lyle Watts stated that the Forest Service would welcome suggestions for workable regulations to exclude jeeps from wilderness areas. In commenting on Dr. Murie's paper, Regional Forester Jay H. Price believed the time had come to define national forest wilderness areas by Act of Congress. Regional Forester P. A. Thompson agreed that this was timely, but stated that wilderness area boundaries would first need careful determination.

The following officers were elected: M. H. Wolff, chairman; James H. Tyndall, vice chairman; H. L. Bill, secretary; and F. C. Koziol and C. Frank Brockman, members of the Executive Committee.

Report of Division of Range Management

The fourth annual meeting of the Division of Range Management was held October 12, 1949, in Seattle, in connection with the annual meeting of the Society. The divisional meeting consisted of both morning and afternoon sessions at which Lincoln Ellison presided. T. Dean Phinney acted as secretary in the morning session, and George W. Kansky as secretary in the afternoon session.

The morning session was a symposium: "Analysis of Grazing Capacity on National Forest Range Lands." The afternoon session was devoted to papers on miscellaneous range subjects.

The meeting room was crowded most of the day. How many were in attendance is not precisely known, but the total was somewhat over 64, since this number signed the register.

A nominating committee was appointed to select candidates for divisional office during the next biennium, consisting of M. W. Talbot, chairman, Melvin S. Morris, and Ernest H. Taylor. The committee will draw up at least two slates and voting will be done by mail ballot.

Report of Division of Forest Economics

The Division of Forest Economics held a joint meeting with the Division of Private Forestry on the morning of Wednesday, October 12. Members of the Division participated in panel discussions on the "Effect of Tax Regulations on Long Term Forestry Program" and "What Economic Studies and Surveys are Needed for Development of a Sound National Program of Insect and Disease Control."

The afternoon session of this Division was devoted to papers by S. Blair Hutchison and Lee M. James with discussion by Henry Vaux and Henry G. White.

Progress report of the Committee on Scope and Method of Research in the Economics of Forestry was presented by Mr. Vaux.

Members of the Division expressed their approval of the arrangement initiated this year whereby the Division met jointly with one of the other Divisions for a half-day session and indicated their desire to continue this arrangement when practicable.

The following officers were elected for the coming year:

Ralph W. Marquis, chairman.
Lee M. James, vice chairman.
Eugene Zumwalt, secretary.

Members of the Executive Committee: Henry Vaux and Ernest Wohletz.

What Professional Fields Should The Society Represent?

The article by W. B. Greeley, "What Professional Fields Should the Society Represent?" in the October JOURNAL is challenging. Since I am an Affiliate member of the Society, I shall not have the opportunity to vote on it, but I would like to express an opinion. The three possibilities seemed fairly stated and I have no argument with the points made by Col. Greeley.

However, I do have a concern that if membership in the Society is limited to "pure" foresters it will be significant of a trend of the S.A.F. to consider only the immediate, short-range interests and welfare of its members. They will gradually become comfortably ensconced in ivory towers apart from the turmoil of world problems. Their thinking will be confined to a convenient compartment of human knowledge.

I would much prefer to see the opposite trend in evidence among the members of our Society—a growing concern as to how to best fulfill their obligation to human society in general. This would lead to a concentration of thought and action on forestry in its relation to the whole scheme of civilization, recognizing that the increasing pressure of this civilization due to enlarging populations and contracting natural resources is forcing a sense of duty on us whether we like it or not. The important questions that will be raised by this sense of duty to humanity could best be attacked by a Society which included within its membership all branches of science that will become involved in the solutions. Foresters should retain their "dominance" in this mixed stand, but their "yield" will not be "sustained" unless they recognize their obligation through forestry to benefit the overall values of society as a whole.

DANIEL SMILEY, JR.,
Mohonk Lake, N. Y.

Syllabus on Professional Ethics Available for Forestry Teachers

"A Syllabus on Professional Ethics as they relate to the Profession of Forestry" prepared by Archie E. Patterson of the School of Forestry, University of Georgia, has been issued by the Society.

Prof. Patterson undertook this assignment under authorization of the Council. His syllabus has been approved by the committee that drafted the code of ethics for the forestry profession, which the membership of the Society adopted by letter ballot on November 12, 1948. The members of this committee were Julius Kahn, chairman; H. H. Chapman, Henry Clepper, Charles F. Evans, and Stuart Moir.

The syllabus is intended primarily for teachers of forestry, and single copies may be obtained without charge on request to the Society. A charge of 10 cents each will be made for copies requested by a nonmember of the Society, and by a member who requests more than one copy.

Members are reminded that the Society has also issued the code of ethics for the profession of forestry, attractively printed in black and green ink on heavy paper 20 by 13 inches, suitable for framing. A charge of 25 cents each is made to cover costs of presswork, mailing tube, and postage.

Coming Events

New York Section Meeting

The New York Section's annual winter meeting will be held in Albany, December 9 and 10, with headquarters at the DeWitt Clinton Hotel. The theme of the meeting will be "Growing Red Pine in New York."

Appalachian Section Meeting

The winter meeting of the Appalachian Section will be held in Raleigh, N. C., on January 20-21.

The Chairman of the Program Committee for this meeting is Prof. C. M. Kaufman, Department of Forestry, North Carolina State College, Raleigh, N. C.

Ozark Section Meeting

The Ozark Section will hold its annual winter meeting in Fort Smith, Ark., February 3 and 4.

Details regarding the program may be obtained from Chairman Robert H. Clark, 216 West College street, Fordyce, Ark.

Southern Pulpwood Association

The annual meeting of the Southern pulpwood Conservation Association will be held at the Biltmore Hotel, Atlanta, Ga., on February 15.

Henry J. Malsberger is forester for the association with headquarters in the First National Bank Building, Atlanta.

Wisconsin-Upper Michigan Section Holds Field Meeting

The Wisconsin-Upper Michigan Section held its annual field meeting on September 16 and 17th at Munising, Mich. Sixty-two foresters registered for the session which was centered around the industrial forestry practices in the upper peninsula of Michigan.

Headquarters for the meeting were at the Beach Inn in Munising. Immediately after registration, a visit was made to the Cleveland-Cliffs Iron Company's selectively cut areas, with stops at one area which had been selectively cut in 1947 and another at which actual logging was being done.

In the afternoon a trip around Grand Island, a practically virgin tract in the bay north of Munising owned by the Cleveland Cliffs Iron Company, was made by truck. After a twenty-mile truck trip (reminiscent of college forestry days) which included stops for the "logging" of windfalls and enjoyment of the vistas from the precipitous cliffs of the island, the group returned to Munising.

The banquet on the evening of the 16th was attended by 76 foresters and guests. Richard C. Hammerschmidt served as toastmaster and the speaker of the evening was Walter Gries, superintendent of the Welfare Department of the Cleveland Cliffs Iron Company. D. B. Smith and Company contributed a back pack pump as a door prize.

A business session was held at 8:30 a.m. on September 17 at which various matters of section business were discussed and voted upon. Following this, the group traveled by car to a U. S. Forest Service plantation west of the Munising airport which was dedicated to the memory of H. Basil Wales. A sign has been erected at the site by the Section and serves to

remind all who see that a living memorial has been established to a forester who did much to advance the profession of forestry. Mrs. Wales was present for the dedication ceremony and responded most graciously to the short talks that were made by Fred Wilson and Robert Sloss.

After a hasty lunch at Camp Shaw the group inspected the work being carried out on the Dukes Forest Experiment Station and disbanded in the early afternoon of the 17th.

R. W. ABBOTT,
Secretary-Treasurer.

Our Society

(Editor's note.—The following interesting item was prepared by James Stevens prior to the national Society meeting in Seattle, October 10-15. Mr. Stevens, well known author of Paul Bunyan books and other stories, is on the staff of the West Coast Lumbermen's Association. Occasionally a critic, but always a friend, of the forestry profession, he rendered notable service to the Society in helping to handle publicity for the meeting.)

Like the bluetailed fly of the song, the foresters have "become so numerous they do swarm" all over these parts. Not that they are pests, I hasten to say—they are really death on pests, as the spruce budworm and the hemlock looper can testify. The rapid multiplication of foresters is heartily applauded by all.

Professional foresters have an organization of their own, just as medical doctors, lawyers and civil engineers do. Many foresters are also civil engineers. Others belong to a variety of technical groups. But among them all the first love of the true forester is "the Society"—the Society of American Foresters, which is to hold its 1949 national convention in Seattle October 10-15.

The Society was started in 1900 by Gifford Pinchot and a few of his colleagues in the small and obscure forestry profession of that day. They were all academic and government men. Now the S.A.F. force of 6,500 technically trained specialists has so many private enterprise foresters that the 1949 president, Clyde Martin, was chosen from this department.

College Loggers

In my early years in the woods and mills, the forestry students who came out to set chokers or slug lumber off the green chain were rare indeed. Now the college logger is a regular in the summer woods. From the faith and enthusiasm of such youngsters in the values of second-growth and in the need for forest fire prevention, we old heads first learned belief in forestry.

One fine day recently I made a trip to the timber with a bunch of foresters who were planning a field tour for the visitors who would come from all over the country to Seattle for the Society convention in October. It was inspiring to see foresters and loggers get together on the plan and on other mutual interests.

Forester Bill Eastman and Timber Faller Carl Peterson, for example, got into a discussion on the relation of forestry to the power saw in the woods. They had the same ideas about it.

Out of their talk I gathered that the use of powered chain saws for the felling of big trees has become general in the Northwest. Light metals, modern design and efficient motors combine to make a tool that the most rugged conservatives among old loggers have accepted.

With the pitch-eating power saw, timber that once was left in stumps now goes out of the woods and into good uses. This means a yield of more wood per tree in timber harvesting. Ground-level, power-saw stumps give seedlings more light and room to grow, making more trees, more wood per acre for tomorrow.

"Saves backaches too," Carl Peterson said.

Navy Foresters

Another planning trip was made with officers of the Puget Sound Section of the Society to the Bremerton Navy Yard's woodworking shop. This was to line things out for a tour that visiting foresters whose specialty is forest products will make during the Seattle convention. There the ties that bind the profession of forestry and the skilled trade of carpentry were found to be of many strong strands.

Carpenters want to know about the supply of wood for their work. They are mightily interested in what the foresters are doing to improve forest products that are in hard competition with "substitutes"—synthetic products that reduce the employment of carpenters.

Inquire around, and you will find that few people in the Pacific Northwest do not have a stake of some kind in the profession that is organized nationally in the Society of American Foresters.

JAMES STEVENS.

Announcement of Candidates for Membership

The following names of candidates for membership are referred to the membership for comment or protest. The list includes all nominations received since the publication of the November JOURNAL without question as to eligibility. Names, addresses, education, and endorsements are given. The names have not been passed upon by the Council. Important information regarding the qualifications on any candidate which will enable the Council to take final action with a knowledge of essential facts should be submitted before January 15, 1950. Statements on different men should be submitted on different sheets. Communications relating to candidates are considered as strictly confidential.

Allegheny

Junior Membership

Pellinger, J. J., Landscape Contractor, Rahway, N. J.; Univ. of Ga., B.S.F., 1946. D. J. Weddell, B. F. Grant, G. N. Bishop.

Appalachian

Junior Membership

Davis, T. S., Gaston County Forester, N. C. Dept. of Cons., Raleigh, N. C.; N. C. State, B.S.F., 1949. C. M. Kaufman, G. K. Slocum, R. M. Carter.

Fuller, G. R., Grad. Student, N. C. State, Raleigh, N. C.; N. C. State, B.S.F., 1949. C. M. Kaufman, L. Wyman, R. M. Carter.

Garrison, J. E., Box 294, Gaffney, S. C.; Univ. of Ga., B.S.F., 1949. A. C. Worrell, A. E. Patterson, B. F. Grant.

Griffin, F. S., Jr., Robbinsville, N. C.; Univ. of Ga., B.S.F., 1949. L. A. Hargreaves, A. E. Patterson, D. J. Weddell.

Martz, R. C., Jr., Asst. Dist. Forester, Va. Forest Service, Richmond, Va.; Pa. State, B.S.F., 1949. G. W. Dean, J. B. Heltzel, S. G. Hobart.

Rogers, G. L., Service Forester, Va. Forest Service, Charlottesville, Va.; La. State, B.S.F., 1949. A. Jolly, Jr., R. P. Brierley, D. R. Drumheller.

Wilson, A. D., Service Forester, Va. Forest Service, Charlottesville, Va.; N. C. State, B.S.F., 1949. A. Jolly, Jr., R. P. Brierley, D. R. Drumheller.

Central States

Affiliate Membership

Kern, L. E., Dist. Fire Warden, Ind. Dept. of Cons., Indianapolis, Ind. Central States.

Junior Membership

Froehlich, J. L., Sr. Forester, Forest Preserve Dist. of Cook County, River Forest, Ill.; Iowa State, B.S.F., 1939. G. B. Hartman, G. B. MacDonald, Henry Clepper.

Gunderson, W. R., Wood Utilization Work, Thureson Lbr. Co., Howell, Mich.; Mich. State, B.S.F., 1947; M.F., 1948. P. A. Herbert, Karl Dressel, P. W. Robbins.

Reinhardt, W. H., Thureson Lbr. Co., Howell, Mich.; Univ. of Mich., B.S.F., 1949. J. Carow, S. W. Allen, J. W. Brown.

Columbia River

Junior Membership

Carnegie, J. A., Asst. Dist. Forester, Bur. of Land Mgmt., Portland, Ore.; Oregon State, B.S.F., 1939. Reinstatement.

Jungbacker, J. P., Asst. to Fire Warden, Ed Hines Lbr. Co., Westfir, Ore.; Mich. State, B.S.F., 1947; P. A. Herbert, Karl Dressel, P. W. Robbins.

McDonell, N. R., Tech. Asst., Oregon State Board of Forestry, Salem, Ore.; Univ. of Wash., B.S.F., 1949. J. C. H. Robertson, S. P. Gessel, C. F. Brockman.

Nicholson, R. L., Farm Forester, Wash. Div. of Forestry, Vancouver, Wash.; Pa. State, B.S.F., 1942. V. A. Beede, H. N. Cope, W. E. White.

Wright, K. H., Forest Ento., Forest Insect Lab., Portland, Ore.; Univ. of Wash., B.S.F., 1948. R. L. Furniss, P. A. Briegleb, A. J. Jaenicke.

Wylie, C. W., Forest Tree Seed Prod., Woodseed Co., Salem, Ore.; Univ. of Mich., B.S.F., 1948. S. T. Dana, S. W. Allen, J. W. Brown.

Gulf States

Junior Membership

Burns, E. B., Parish Forester, La. Forestry Comm., Baton Rouge, La.; La. State, B.S.F., 1949. E. J. Mead, H. J. Kitchens, Jr., R. T. Wall.

Dixon, M. J., Forester, U.S.F.S., Winnfield, La.; Univ. of Fla., B.S.F., 1949. E. A. Ziegler, P. W. Frazer, H. S. Newins.

Marshall, T. W., Co. Forester, Mansfield Hardwood Lbr. Co., Zwolle, La.; La. State, B.S.F., 1949. W. W. Holman, W. C. Postle, C. D. Mattson.

Migliceo, A., Parish Forester, La. Forestry Comm., Hammond, La.; La. State, B.S.F., 1949. E. R. Gunter, R. T. Wall, J. H. Kitchens, Jr.

Smith, A. B., Cons. Forester, Brown Paper Mill, Monroe, La.; La. State, B.S.F., 1948. J. W. Craig, J. E. Weatherly, Jr., W. W. May.

Inland Empire

Junior Membership

Hawksworth, F. G., Research Asst., Univ. of Idaho, Moscow, Idaho; Univ. of Idaho, B.S., (Forestry), 1949. R. T. Bingham, W. Terrell, E. E. Herbert.

Thomson, K. G., Foreman, U.S.F.S., Clarkia, Idaho; Pa. State, B.S.F., 1949. D. R. Kyer, A. B. Bowman, G. T. Cornell.

New England

Associate Membership

Potts, Samuel F., Entomologist, Forest Insect Div., New Haven, Conn.; Miss. State, B.S., (Agric.), 1921; Univ. of Md., M.S., 1924. New England.

Junior Membership

Burgess, R. F., Grad. Asst., Univ. of Maine, Orono, Me.; Univ. of Me., B.S.F., 1938. R. I. Ashman, A. G. Randall, H. A. Plummer.

Church, C. J., Dierks Forest Products Repre., Hawkins Lbr. & Warehouse Co., Boston, Mass.; Univ. of Me., B.S.F., 1949. G. Baker, R. I. Ashman, F. K. Beyer.

Damon, H. F., Jr., Frankson Furniture Mfg. Co., West Ossipee, N. H.; Yale, A.B., (Economics), 1936; M.F., 1949. H. H. Chapman, W. H. Meyer, E. V. Zumwalt.

McNally, J. A., Resident Mgr., Brown Corp., Quebec, Canada; Univ. of N. B., B.S., 1930; M.S., 1936. New England.

Nelson, C. L., Forester, Great Northern Paper Co., Bangor, Me.; Univ. of Me., B.S.F., 1949. R. I. Ashman, A. G. Randall, H. A. Plummer.

Nicholson, J. D., Forester, Great Northern Paper Co., Bangor, Me.; Univ. of Me., B.S.F., 1949. R. I. Ashman, H. A. Plummer, G. Baker.

New York

Junior Membership

Halberg, J. E., Student, N. Y. State College of Forestry, Syracuse, N. Y.; Mont. State, B.S., (Forestry), 1949. P. E. Burns, C. W. Waters, T. A. Walbridge, Jr.

Northern California

Junior Membership

Conrow, T. M., Scaler, U.S.F.S., Canby, Calif.; Univ. of Calif., B.S.F., 1949. R. A. Cockrell, J. Kittredge, P. M. Barr.

Hanson, R. C., Scaler, Winton Lbr. Co., Martell, Calif.; Univ. of Minn., B.S.F., 1948. S. H. Bryan, W. A. Carleton, A. W. Herbert.

Northern Rocky Mountain

Member Grade

Neitzling, F. J., Forest Supv., Flathead Natl. Forest, Kalispell, Mont. Reinstatement.

Ozark

Junior Membership

Griffin, B. F., Compassman, Pomeroy & McGowin, Forest Managers, Monticello, Ark.; Univ. of Ga., B.S.F., 1949. H. H. Chamberlin, Z. W. White, G. W. Stanley.

Phifer, T. E., Mgmt. Asst., Ark. Forestry Comm., Little Rock, Ark.; La. State, B.S.F., 1948. P. T. Kelly, L. M. Anderson, W. A. Faucheux.

Scott, T. R., Forester, Pomerory & McGowin, Forest Managers, Monticello, Ark.; La. State, B.S.F., 1948. H. H. Chamberlin, Z. W. White, G. W. Stanley.

Puget Sound

Junior Membership

MacAlpine, W. W., Lookout, U.S.F.S., Marblemount, Wash.; N. Y. State, B.S.F., 1949. W. J. Moisio, H. O. Wilson, H. E. W. Brown.

Melrose, R. M., Wood Finisher, F. S. Harmon Mfg. Co., Tacoma, Wash.; Univ. of Wash., B.S.F., 1947; Yale, M.F., 1949. G. A. Garratt, E. V. Zumwalt, R. W. Hess.

Member Grade

Covington, D. M., Resident Mgr., Univ. of Wash., Seattle, Washington; Univ. of Wash., B.S.F., 1927. Reinstatement.

Southeastern

Junior Membership

Binns, W. A., Henry Binns Hotel, Albany, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, B. F. Grant.

Darby, S. P., Grad. Student, Univ. of Ga., Athens, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, E. A. Hargreaves, Jr.

Hamilton, J. R., County Rgr., McDuffie County, Thomson, Ga.; Univ. of Ga., B.S.F., 1948; M.S.F., 1949. D. J. Weddell, A. E. Patterson, L. A. Hargreaves, Jr.

Nelson, R. B., 420 Howell St., Thomaston, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, L. A. Hargreaves, Jr.

Starks, H. B., Forester, U.S.F.S., Wilma, Fla.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, A. C. Worrell, B. F. Grant.

Member Grade

Smith, R. B., Assoc. Prof., School of Forestry, Univ. of Fla., Gainesville, Fla.; N. Y. State, B.S.F., 1932; Ph.D., 1948. Reinstatement.

Southwestern

Junior Membership

Clark, D. W., Range Exams., Navajo Service, Window Rock, Ariz.; Colo. State, (4 yrs.). Southwestern.

Upper Mississippi Valley

Junior Membership

Johnson, A. R., Rgr., Forest Survey, Iron Range Resources and Rehabilitation, Hibbing, Minn.; Univ of Minn., B.S.F., 1948. J. R. Bergeron, J. M. Kittelson, R. W. Hosfield.

Parker, C. A., Student, Iowa State, Ames, Iowa; Iowa State, B.S.F., 1949. L. F. Kellogg, G. B. Hartman, J. A. Larsen.

Washington

Junior Membership

Bean, L. S., Gen. Inspector, U.S.F.S., Washington, D. C.; Colo. State, B.S.F., 1925. Reinstatement.

Patterson, D. H., Major, U. S. Army, General Supplies Group, Washington, D. C.; Iowa State, B.S.F., 1940. G. B. Hartman, G. B. MacDonald, J. E. Granson.

Wisconsin-Upper Michigan

Junior Membership

Faber, E. J., Dist. Forester, Wis. Cons. Dept., Mercer, Wis.; Mich. College of Mining & Tech., B.S., (Forestry), 1948. Wisconsin-Upper Michigan.

Petry, R. A., Forester, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; Univ. of Calif., B.S.F., 1939. W. H. Brener, A. E. Nelson, A. S. Haukom.

Schroeder, R. E., Asst. to Dist. Forester, Wis. Cons. Dept., Hayward, Wis.; Univ. of Minn., B.S.F., 1949. R. Romnes, R. W. Abbot, F. B. Trenk.

Foreign

Corresponding Member

Juncker, Flemming G., Owner of Overgaard, Havndal, Denmark; Forstkandidat, 1929. Committee on International Relations.

Junior Membership

Gruenfeld, J. J., Grad. Student, Oxford Univ., Oxford, England; Colo. A & M., B.S., (Science & Arts), 1948; M.F., 1949. J. L. Deen, W. Schaeffer, J. V. K. Wagar.

The following have been Junior members for at least 6 years and are eligible for automatic advancement to Member grade. The Sections have certified them as actively engaged in forestry work and competent to represent the profession honorably and capably in the performance of their duties.

Central States

Suddarth, S. K., Grad. Student, Purdue Univ., W. Lafayette, Ind.

New England

Harmon, Marvin, Portland, Maine.

Northern California

McIntyre, R. N., Box 33, Yosemite National Park, Calif.

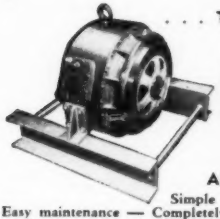
Elections to Membership

Affiliate

Bowie, P. C., S. C.
Fletcher, O. J., Calif.
Riley, J. D., Calif.

Junior

Adams, R. T., Me.
Anderson, R. E., Mass.
Armstrong, G. R., N. Y.
Barkley, R. E., Ind.
Baronovich, F. J., Calif.
BaRoss, R. P., N. Y.
Baskerviell, J. C., N. C.
Belforte, C. R., Calif.
Black, B. W., Calif.
Bradley, J. M., Jr.
Brown, K. D., Iowa
Bryant, H. R., Ore.
Buck, R. J., Fla.
Bumgarner, H. D., Fla.
Bushman, R. R., Md.
Bylsma, J. E., Ind.
Carlaw, J. B., N. J.
Carts, C. B., Pa.
Castor, G. D., N. Y.
Chitty, M. L., Me.
Clute, V. C., N. Y.
Coleman, G. B., Pa.
Collins, P. E., Kans.
Colville, W., Jr., N. Y.
Damon, H. S., Conn.
Daugherty, R. G., Ind.
Davidson, H., Calif.
Dodge, J. M., Calif.
Eaton, J. W. C., La.
Fenner, R. L., Calif.
Fleener, E. T., Ind.
Fordyce, D. H., Ariz.
Gaffney, M. T., Fla.
Gilbert, J. A., Okla.
Gilbert, R. R., Calif.
Goodrich, T. K., Ind.
Graff, J. N., Va.
Grimm, D. K., Idaho
Hewlett, J. D., Va.
Hicks, L. E., N. C.
Hoffman, E. J., S. Dak.
Holtsclaw, W. P., Ore.
Hunter, C. K., Ind.
Hyde, R. S., Pa.
Hyder, D. N., Utah
Jarmolovich, V. J., Conn.
Johns, L. A., Mich.
Johnson, F. L., N. Y.
Keck, R. M., Ind.
Kelley, W. G., N. C.
Kirkpatrich, R. P., Ind.
Lee, G. E., N. Y.
Lupa, A. J., Wis.
Lynch, T. F., Mass.
Mattox, J. E., Idaho
Marshall, J. M., S. C.
Marsicek, A. J., Ind.
McArthur, D. M., N. Y.
McCullough, J. M., Ala.
Merroth, C. S., Pa.
Meylan, G. J., N. Y.
Mitchell, A. L., Iowa
Mooney, R. L., Ind.
Neff, A. W., Conn.
O'Barr, M. M., Ga.
O'Leary, J. E., Ore.
Owens, J. M., N. Y.
Packman, R. S., Ind.
Patton, A. C., Ark.
Pedlar, J. E., Calif.
Penney, R. A., N. Y.
Perryman, J. D., Fla.
Reifsnyder, W. E., Calif.
Riley, J. C., Fla.
Rumpf, R. H., Pa.
Sacher, J. A., Calif.
Scholten, H., Ind.
Smith, L. J., N. C.
Smith, R. E., Ind.
Startt, C. E., Calif.
Stevens, I. E., Ill.
Storms, M. W., Ore.
Stricklin, H. B., Ariz.
Thrapp, H. W., Idaho
Turner, C. L., Fla.
Upton, N. W., Wis.
Wallace, R. J., N. Y.
Wenzel, O. G., Wash.
Whipple, P. C., Mass.
Whittern, L. B., Ind.
Williams, R. D., Ind.
Winer, H. I., Conn.
Wright, J. P., Conn.
Zaidliez, E., Iowa



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Forestry News

Compiled by ROBERT D. HOSTETTER, *Assistant Executive Secretary*

Association of State Foresters Elects Officers

Pictured above are the officers for 1950 of the Association of State Foresters. They were elected at the 27th annual meeting of that organization, held from October 3 to 6 at Hot Springs National Park, Arkansas. From left to right are: Executive Member George O. White, State Forester of Missouri; President Joseph F. Kaylor, Director of the Maryland Department of State Forests and Parks; Vice President DeWitt Nelson, State Forester of California; Secretary-Treasurer C. H. Coulter, State Forester of Florida; and Executive Member Stanley G. Fontana, Deputy Director of the Michigan Department of Conservation. Mr. Fontana served as president during the past year. All are Members of the Society of American Foresters.

State Foresters Request Insect Control Board

Describing forest insect problems as "extremely critical," the Asociation of State Foresters has requested the Secretary of Agriculture to select members for an advisory baord to counsel with federal authorities on the approval of insect control projects and the allocation of funds.

The state foresters passed the resolution to facilitate state, federal, and private cooperation in insect control during their meeting in Arkansas on October 3-6.

Featured speakers at the meeting included Henry J. Malsberger, Southern Pulpwood Conservation Association; W. C. Hammerle, Southern Pine Association; P. A. Bloomer, Louisiana Long Leaf Lumber Co.; Vertrees Young, Gaylord Container Corporation, and C. F. Byrons, Arkansas Resources and Development Commission.

The executive committee of the state foresters' organization works in close cooperation with American Forest Products Industries, Inc., in furthering the national forestry programs sponsored by the industry organization.

Forestry Progress Analyzed

"Forty Years of Western Forestry Progress" is the keynote of the annual conference of the Western Forestry and Conservation Association which is scheduled for December 8, 9, and 10, 1949 at the Multnomah Hotel, Portland, Ore.

Forest management and protection policies, programs, and accomplishments of industry and public agencies will be reviewed and analyzed to see how well they are suited to today's conditions and needs, and current problems will be discussed.

Stuart Moir is forest counsel for the organization, and Clyde S. Martin is its secretary.

Plywood Production Increases

According to Richard H. May and Alexander Simontacchi of the California Forest and Range Experiment Station, the California production of bolts for plywood was over 71 million board feet in 1948, an increase of nearly five times that in 1946. Log production for pulpwood increased nearly eight-fold in the same period.

California leads all other states in the consumption of plywood.

Natural Resources Council Elects Sears and Clepper

New officers of the Natural Resources Council of America were elected at a meeting of the Council held in Ohio on October 7 and 8.

The chairman is Dr. Paul B. Sears of Oberlin College, representing the Ecological Society of America. He succeeded Howard Zahniser of the Wilderness Society, Washington, D. C.

The new vice chairman is Henry Clepper of the Society of American Foresters, succeeding Dr. Sears.

C. R. Gutermuth of the Wildlife Management Institute and Harry E. Radcliffe of American Nature Association were reelected as secretary and treasurer.

The Council's objective is sound management of natural resources in the public interest. A nonprofit body, it acts as a service agency to its member organizations, but does not undertake to control the policies or actions of member organizations.

Although there are no membership dues, the Council through voluntary contributions of member organizations supports "Conservation News Service" for the information of members. The editor is Carl D. Shoemaker of the American Wildlife Federation.

O & C Board Reappointed

Reappointment of the O & C Advisory Board for another year was announced in October by Secretary of the Interior J. A. Krug. The board assists the Bureau of Land Management in the development of policies for the administration of a land management program on 2½ million acres of revested Oregon and California railroad grant land.

Members of the Society of American Foresters on the 18-man board are Herbert J. Cox, Paul M. Dunn, David T. Mason, Stuart Moir, George W. Peavy, and Reginald T. Titus.

The vacancy on the board caused by the recent death of Nelson S. Rogers has not yet been filled.

Federal Legislation

On October 19 the Senate and House of Representatives adjourned until January 3, 1950, when the Second Session of the 81st Congress will commence.

Forest

H. R. 2296 to amend the Act of June 7, 1924 (43 Stat. 653), the Clarke-McNary Act, was signed by President Harry S. Truman on October 26, 1949, and became Public Law 392. In its final form sections 4 and 5 were deleted.

Section 4 provided for an extensive program of direct technical assistance to farmers and woodland owners in planning, managing, and marketing timber. The purpose of the section was to provide a program of technical assistance particularly to small forest owners designed to supplement the educational, reforestation, and fire protection programs provided for elsewhere in the bill.

The elimination of section 4 also required the striking from the bill of section 5, repealing the Cooperative Farm Forestry or Norris-Doxey Act which would have been unnecessary if section 4 had remained. "Certain work is being carried on under that act, however, which should be continued without interruption until such time as it can be replaced by other legislation," reported the legislators prior to final passage.

S. J. Res. 53, providing for reforestation and revegetation for forest and range lands, and for other purposes became Public Law 348 on October 11, 1949.

Wildlife

H. R. 2418, to authorize restocking, propagation, and conservation of game in the Elgin Field Reservation became Public Law 345 on October 11, 1949.

Craig Supplies Forestry Tools

James W. Craig, consulting forester of Jackson, Miss. is developing a service for other foresters whereby he assembles for sale the various small tools and materials commonly used by foresters.

Articles supplied range from increment borers, tapes, and surveying equipment to tick repellants, marking paint, and fire tools.

Plastics Curriculum Offered At New York Forestry College

Professional education in plastics is provided by a new optional curriculum inaugurated this fall by the New York State College of Forestry, Syracuse. The program is the first of its kind to be given by any forestry school.

Two assistant professors of forest chemistry have been added to the faculty of 65, and six new courses are offered senior and graduate students in the department of pulp and paper manufacture. The new courses cover plastics and cellulose technology; plastics properties, design, and structure; cellulose and wood chemistry; and high polymer chemistry. They supplement the 16 existing, fundamental courses in pulp and paper manufacture and cellulose and plastics chemistry.

Twenty-two seniors and nine graduate students have enrolled for training for technical positions in the plastics, cellulose, pulp and paper, and allied industries.

Trumpeter Swans Increase

Trumpter swans, which numbered a scant 73 in 1935, have continued their increase in numbers until there are now 451 of the big birds in the United States.

Establishment of the Red Rock Lakes Refuge of Montana and the U. S. Fish and Wildlife Service's management program largely account for the increase. Transplanting has been aimed at minimizing effects of local drought or abnormally cold weather during nesting periods.

DDT Controls Arborvitae Pest

Elimination of adult arborvitae weevils, before oviposition, with DDT or benzene hexachloride reduced the following generation of larvae 99.2 percent in studies reported by Theodore W. Kerr, Jr. in Bulletin 305 published by the Rhode Island Agricultural Experiment Station.

The insect attacks the roots and foilage of several varieties of *Thuja*, *Chamaecyparis*, and *Juniperus*.

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Photo—Louisiana Forestry Comm.

Seven Planters to Set 5,000,000 Trees

Largest single shipment of tree planting machines ever made in the South is shown being received at Ruston, La. The seven machines, developed by the Illinois Central Railroad, were purchased by the D'Arbonne, Dugdemona, and Saline Soil Conservation Districts for reforestation work by small landowners. An estimated 5,000,000 trees will be set out in this area this fall. J. Walter Myers, Jr., railroad forestry agent, Baton Rouge, La., is shown explaining a machine's operation to C. C. Sheppard, prominent Clark's, La., lumberman and former president of Southern Pine Association. Standing left to right are: H. B. Martin, state conservationist, U. S. Soil Conservation Service, Alexandria; Roy O. Martin, president, Martin Lumber Co., Alexandria; Mrs. Lee Craig Levy, president, Louisiana Federation of Women's Clubs, Natchitoches; and John Ferran, executive-secretary, Louisiana Forestry Association, Alexandria. Kneeling right is J. H. Kitchens, Jr., assistant state Forester, Louisiana Forestry Commission, Baton Rouge.

Scotch Course Scheduled

A course on "Forestry in Scotland," intended for staffs of forestry organizations and institutions in the British Commonwealth and from other countries, has been scheduled for September 11 to 23, 1950, by The British Council. Attendance is limited to 20 persons.

Four days devoted mainly to lectures will be spent in the University of Aberdeen and nine days will be devoted to a tour of forest nurseries, afforestation projects, natural and planted forests, and other points of interest in Scotland.

A similar course was conducted in May, 1949, in North Wales.

Conklin Goes to Springfield

Robert P. Conklin, who for the past several years has been in charge of the preliminary developments for Weyerhaeuser Timber Company on the Oregon coast at Coos Bay, has been transferred to Springfield, Ore. where he will be assistant to the general manager at the big, new, integrated lumber and pulp plant which Weyerhaeuser put into production at that Willamette Valley point recently.

Minnesota Forestry Division Raised to School Status

The Division of Forestry of the University of Minnesota was given school status on July 1, 1949, and will now be the School of Forestry in the College of Agriculture, Forestry, Home Economics, and Veterinary Medicine. F. H. Kaufert who was chief of the division continues as director of the school and Dean Henry Schmitz as dean of the College.

Recent additions to the staff of the School of Forestry are Arthur E. Schneider and Carl Stoltenberg.

Mr. Schneider is a graduate of the University of Minnesota and has his master's degree from American University in Washington, D. C. He will handle course work in forest protection, some field instruction at the Cloquet Forest, and do research.

Mr. Stoltenberg received his B.S. and M.S. degrees from the School of Forestry of the University of California. He will continue his graduate work, assist in the teaching program, and conduct several research studies.

Forester-Wildlifer Offers Visual Education Service

Roy Dale Sanders, Rural Route 5, Evrodale, Brainerd, Minn., has just announced that he is offering a new visual education service to forestry and wildlife industries and agencies. Mr. Sanders, a visual education technichian, is equipped to produce color-sound movies or to prepare still pictures for use by any organization. He has a specially equipped photo truck and a complete laboratory where material can be edited and prepared in final form.

A 1932 forestry graduate of the University of Minnesota, he has had varied experience in the U. S. Forest Service, including two years in the Division of Information and Education in the Washington, D. C., office. During that time he became director of photography. A major production was "Everyman's Empire" which he directed and photographed.

Resigning from the Forest Service in 1948 he has since devoted his time to building and equipping his laboratory and in preparing to offer his unique service. During the war he was photographic officer with the Third and Fifth Pacific Fleets.

Mr. Sanders is prepared to supervise the entire production of 16-millimeter color-sound movies, including script writing, direction, photography, editing, and sound supervision. This will result in a substantial financial saving to interested groups throughout the U. S. who wish to produce a movie, he says.

SPCA Releases Third Movie

"Birth of a Southern Pine," the third in a series of forestry educational films, has been completed under the sponsorship of the Southern Pulpwood Conservation Association and the Georgia Forestry Commission, according to H. J. Malsberger, forester for the association.

Fertilization, germination, and seedling growth are portrayed in a manner designed to interest viewers in protecting and perpetuating forests.

The 15-minute, color-sound film is available from the association at the cost of printing—$60. A few copies are available for loan.

Most 1949 New York Foresters Find Non-Federal Employment

Eight out of every ten seniors who graduated from the New York State College of Forestry in June 1949 are employed in the type of work for which they were trained. Of these, only one-tenth are federally employed, according to L. P. Plumley, assistant to J. S. Illick, dean of the College.

Thirty-two percent of the 56 graduates of the general forestry curriculum now employed are with private industry; 20 percent with the federal government; 15 percent have been employed by states; 11 percent with city and county organizations; and 22 percent are continuing their education.

Twenty-nine of the 32 graduates in conversion and distribution of forest products, retail merchandising and light construction, and wood technology are privately employed while one is doing graduate work.

All 11 graduates in landscape engineering and recreational management as well as the 17 who majored in pulp and paper manufacture are either employed by non-federal organizations or are continuing their education.

One student who received an advanced degree in pulp and paper manufacture is now industrially employed in Sweden and another in Norway.

A total of 131 students received Bachelor of Science degrees and 17 were awarded advanced degrees last June at the New York school.

Austrians Learn U. S. Logging

Two Austrian logging experts are currently in the United States under a Marshall Plan project to study the use of modern equipment in timber harvesting. They are Dr. Arnold Elsaesser and Dr. Peter Handel-Mazzetti.

In requesting the project, the Austrian Government said that modernization of Austrian logging industry would help her meet the large demand for wood and wood products in other European countries. In pre-war years the industry furnished a livelihood for one-sxith of the Austrian population.

ECA dollar costs in the project, including subsistence and travel, are estimated at $3,600.

Veteran Buyer Retires

William R. Gingerich, who purchased more than 1,750,000 cords of pulpwood for the West Virginia Pulp and Paper Company, retired on October 31 after 45 years of service for the company. Since 1930 he has managed the procurement department of the Luke, Md., mill.

WILLIAM R. GINGERICH

In the early days of Mr. Gingerich's career the company bought about 60,000 cords of wood a year to supply the Luke mill. An annual quantity of 75,000 cords is required now. Much of that amount is harvested with power saws, mechanically handled, and transported to the mill in fast trucks in contrast to the early methods which required hand tools and depended on wagons and water for transportation.

Union to Present Bookshelf

Citing the omission of some desirable books from the bookshelf selected for presentation to schools by members of the West Coast Lumbermen's Association, the Thirteenth Constitutional Convention of the International Woodworkers of America held in Vancouver, B. C. from September 26 to 30 resolved "to (a) obtain the advice of public-minded conservation experts in selecting a forestry and wood utilization bookshelf for the United States, and a similar one for Canada, of appropriate books and pamphlets, and (b) to make such literature available for purchase by local unions to present to high school, college, and public libraries."

Fairground Forest Gives Farmers A Living Picture

"A pattern of incalculable value for any county to follow" is what James Stevens of Seattle, Wash. calls a ten-acre demonstration forest at the Columbia fairgrounds at Deer Island, Ore.

A small timber owner sees a living picture of how he can manage his woodland to earn satisfying wages and at the same time take out wood each year in ways and means to maintain his stand, according to Mr. Stevens.

The 16 members of the county farm forestry committee manage the Columbia County tract.

Positions Wanted

Forester, 23, married; graduate of Michigan State College, B.S. in 1948, and Duke University, M.F. in 1949. Six months' experience with U. S. Forest Service in forest soils research. Excellent background in mathematics. Desire permanent position as forester with forestry-minded company. References and details upon request. Lake States preferred.
Box A, Journal of Forestry, Mills Building, Washington 6, D. C.

Michigan State graduate, B.S.F., 1924. Sixteen years with U. S. Forest Service. Nine years forest management and administrative, 5 years timber production, and wood utilization, research; two years Forest Products Laboratory, softwood waste markets and utilization studies and low grade hardwood timber and log utilization research. Desire permanent position in forestry or wood utilization. References and details on request.
Box S, Journal of Forestry, Mills Building, Washington 6, D. C.

Michigan State College graduate, B.S., 1941 in Forestry and Soils, desires position with private forestry organization. Fourteen months with U. S. Forest Service, 7½ years with mining and paper companies in Lake States, surveying, cruising, mapping, logging contracts, some experimental work. Details and references upon request.
Box P, Journal of Forestry, Mills Building, Washington 6, D. C.

Graduate Forester, 29, University of Minnesota, B.S., 1942 and M.F., 1948. Three years private industry in manaement, cruising, and logging supervision; 3 months landscaping. Data and references on request.
Box Q, Journal of Forestry, Mills Building, Washington 6, D. C.

Forestry graduate, 36, highly successful 15 year record in logging, timber management, and sawmill operation desires opportunity in lumber or paper manufacturing and business administration under top executive of aggressive company.
Box R, Journal of Forestry, Mills Building, Washington 6, D. C.

Fire-Retardant Use Doubles

During 1948, lumber and other wood products given fire-retardant treatment totaled 9,579,787 board feet. This was 90 percent more than was treated the previous year, according to the American Wood Preservers' Association.

Kraebel Applies Watershed Research to Land-Use Methods

Charles J. Kraebel has been assigned as a special assistant to the director of the California Forest and Range Experiment Station to design methods for land-use practices based on results of research conducted under his direction. He was in charge of watershed-management research from 1927 until October 1949 at the California station.

His planning will concern logging practices, road construction, and revegetation to reduce the loss of soil and increase the yield of water from mountain areas. He will also be called upon to help plan conservation practices needed for full development of water resources in the Central Valley, Columbia River, and Colorado River basins.

E. A. Coleman has been named as Mr. Kraebel's successor as chief of Watershed research.

Forest Farmers Issue Manual

Paul W. Schoen, executive secretary of the Forest Farmers Association, P. O. Box 692, Valdosta, Ga. has announced that his organization will issue "The Forest Farmer Manual" in February, 1950.

It will contain tables, charts, and other practical and useful information which are needed in woodland activities, according to Mr. Schoen.

Price of single copies will be one dollar.

Stout Heads AFPI in South

C. Edward Stout, former information and education chief for the Georgia Forestry Commission, was appointed in October by American Forest Products Industries, Inc. to be its southern manager. His office is at 1033 Canal Building, New Orleans, La.

Schrader Heads Plywood Promotion and Research

O. Harry Schrader, Jr., will become director of the Douglas Fir Plywood Association on December 15. His appointment was announced by the plywood industry management committee of the 54-factory, West Coast trade promotion organization.

O. HARRY SCHRADER

Mr. Schrader, who is now the director of the State of Washington Forest Products Institute, will supervise and administer the activities of the Association.

Promotional activities are directed toward specifiers and users of plywood as one phase of the Association's work, a budget of approximately one million dollars being allotted for that purpose.

Another phase of the organization's work is research. Projects now underway include the development of new products from mill waste; the use of overlays to add properties such as abrasive-resistance or to permit the utilization of low-grade veneers; and cooperative projects to develop new markets that are carried on in conjunction with paint manufacturers, adhesive manufacturers, and other independent research laboratories.

The Douglas Fir Plywood Association also inspects plywood produced by member mills to make sure that it conforms to rigid industry established standards.

Field service offices are maintained at Chicago, New York, and Washington, D. C. Another office is soon to be opened in Dallas, Texas.

Branch Takes California Post

Willis C. Branch, who entered the U. S. Forest Service in North Carolina in 1931, has been named assistant regional forester in charge of state and private forestry activities in the California Region. Mr. Branch has been in the Division of Cooperative Forest Protection in Washington, D. C., since 1945 and succeeds W. S. Swingler, recently appointed regional forester at Philadelphia, Pa. In his new assignment Mr. Branch will work with state officials in all phases of cooperative forestry including forest fire protection and the promotion of good forest practices in state and private holdings in California and southwestern Nevada.

Marking Service Offered

A free timber marking service is now being offered to small landowners in twenty Louisiana parishes according to State Forester James E. Mixon.

"This service is for the small landowner who has only a few acres of woods," Mixon emphasized. "It is not sound economy for the Commission to offer marking service to large land holdings whose needs can best be served by private forest consultants. It is our job to help the man whose holdings are so small that they do not justify the hiring of a private forester."

"KEEP AMERICA GREEN"
SCENE-IN-ACTION
FOREST FIRE DISPLAY

See photograph and story page 783, Sept. Issue JOURNAL OF FORESTRY. Display may be purchased through state KEEP GREEN or FORESTRY ASSOCIATIONS. *Sample will be shipped* F.O.B. MINNEAPOLIS or LOS ANGELES on order or receipt of check for $10.20. For information write:

A. L. LIND COMPANY
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LUMBER SPECIALISTS WANTED

Positions open for two field men to contact producing mills as buyers and inspectors. Knowledge of Appalachian hardwood lumber grades important. Steady employment with opportunity to advance. Married men between 30 and 35 preferred.

Box N, Journal of Forestry, Mills Building, Washington 6, D. C.

Foresters, Bankers, Leaders Attend Forestry Meeting

On October 19 over one hundred foresters, bankers, and community leaders of the forested areas of Missouri attended a forestry meeting at Van Buren, Mo., which was sponsored by the Federal Reserve Bank of St. Louis with the cooperation of the Missouri Bankers Association, the Forestry Department of Missouri University, and the Forestry Division of the Missouri Conservation Commission.

George White, Missouri state forester, and Byron Groesbeck, supervisor of the Clark National Forest at Springfield, Mo., conducted the group on a tour through nearby forests, demonstrating the possibilities of far greater financial returns to individuals who employ good management practices.

Gardener Ascends Whitney

L. F. Abel of the Inyo National Forest reports that a new threat to wilderness areas may be emerging in the form of a "one-wheel jackass," otherwise known as a common garden tractor. Recently a resourceful hiker was seen hiking up the Mt. Whitney trail, guiding a gas-motored garden tractor. On the tractor he had fitted a tub which contained his camping equipment. He is reported to have made the entire 13-mile distance to the top of Mt. Whitney (14,496 ft.), the highest point in continental U. S.

CHRISTMAS CARDS OF WOOD
SPECIAL OFFER
Six unusual cards of 6 different woods sent postpaid for $1.00 complete with envelopes, correspondence cards and illustrated folder.
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- MUSSER TREES ARE GROWING IN ALL 48 STATES!

Write for Special Xmas Tree Growers' Guide, and complete Planting Stock Price List.
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German Forester Discusses Forest Protection Problems

Dr. Otto Wulz, who is traveling and studying in this country under the auspices of the U. S. Military Government in Germany, recently lectured on German forest protection problems at the School of Forestry of the University of Minnesota.

Dr. Wulz taught at Freiburg University in Germany, and for fifteen years was director of the State Forestry Division of Wuerttemberg-Baden.

Dr. Wulz's itinerary in this country has been arranged by the U. S. Forest Service.

Reynolds Changes Employment

Charles E. Reynolds is now forester and sales representative for the Aerial Mapping Co. with headquarters at 1210 Guardian Building, Portland, Ore. Reynolds, who initiated many mechanization innovations when he was in charge of the Forest Industries Nurseries at Nisqually, Wash., was also formerly employed by both Weyerhaeuser Timber Company and Long-Bell Lumber Company.

Forestry School Men See South

During the two weeks from August 23 to September 5, 1949, representatives of twelve forestry schools toured the forests of the Southeast, conducted by Dean D. J. Weddell of the School of Forestry, University of Georgia, and W. R. Hine of the U. S. Forest Service, assisted by local men in state, federal, and private work. This "show-me trip," organized at the suggestion of forestry school executives, was judged strikingly successful by the 18 men who were in attendance for some portion of the trip.

Starting at Charleston, the experimental and administrative work of the Forest Service on the Francis Marion National Forest was observed, centering upon the problems of hardwood competition and loblolly management on the coastal plain. Later, representatives of three large pulp companies showed the possibilities of private forestry in this region.

In the vicinity of Lake City, Fla., the development of forestry in the longleaf country and modern developments in turpentining were observed, together with nursery work, forest planting, and the management of plantations.

Other stops were made at Union, S. C.; Valdosta, Ga.; Soperton, Ga.; the Coweeta, Calhoun, and Bent Creek Experimental Forests; and Biltmore, N. C.

In commenting on the trip, Professor F. S. Baker, dean of the School of Forestry at the University of California, observed, "Thinnings at a profit in plantations well under twenty years of age were repeatedly seen; reproduction 'to order' by the use of standard silvicultural practices 'just like in the books' was refreshingly common. Demonstration fires were nonchalantly set off in mid-August and were watched with complacence while the foresters in charge explained the art of prescribed burning."

Rattlesnakes and hurricanes were unexpected diversions, but Professor Baker says "It was a great trip—oleoresins to soil horizons, little leaf to razorbacks, ammates and fire to forest planting. To say nothing of Brunswick stew, catfish, and hushpuppies."

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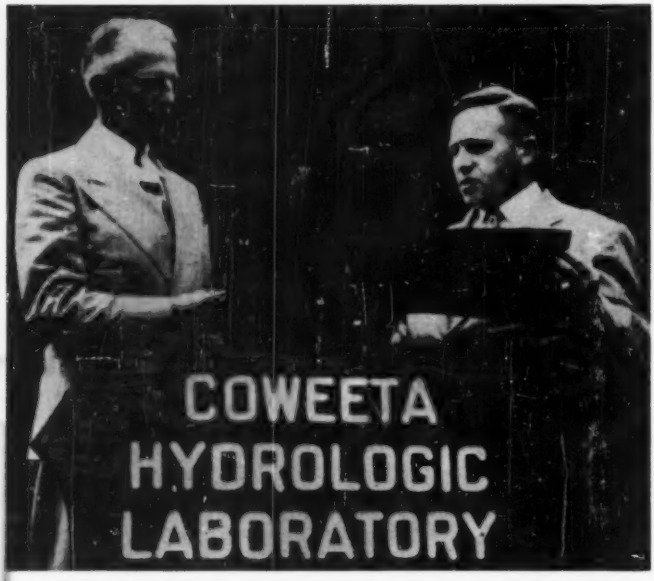

Hydrologic Laboratory Cited for Achievements

USDA presented a Superior Service Award to the Division of Watershed Protection and Management, Southeastern Forest Experiment Station, September 9, at the Coweeta Laboratory in the western North Carolina mountains. Charles R. Hursh (left), who has led the Coweeta project since its beginning, accepts the award on behalf of his unit. The presentation was made by Nathan Koenig (right), acting for Secretary of Agriculture Brannan. The award is "For outstanding research achievements regarding the relation of climate, soil, and forest vegetation to stream flow; the establishment of basic principles of hydrology and watershed management; the translation of research results into practical techniques of water resource management; the effective dissemination of research findings; and for loyalty, determination, and skill in developing and operating a major hydrologic laboratory."

Stream-flow records maintained for 15 years at the station have proved quantitatively the hydrologic effects on watersheds of logging, mountain farming, cattle trampling, and other uses under various rainfall conditions. The results have wide application in the administration of municipal and industrial watersheds.

C of C Prints Forestry Manual

The need for increased public interest in safeguarding the nation's timber resources is highlighted in a new Forestry Manual prepared by the Chamber of Commerce of the United States.

Designed to encourage local chambers to organize forestry committees, the manual explains how these groups can act to encourage, assist and expedite a long-range protective program, within the pattern of private enterprise, to assure proper harvesting and replanting of timberlands.

The manual was written by G. Harris Collingwood, forestry consultant, under direction of David J. Guy, manager of the National Chamber's Natural Resources Department.

International Paper Co. Tells "How Money Grows on Trees"

Supplementing its recently-issued 1948 Report to the People of the South with a booklet titled "How Money Grows on Trees," the Southern Kraft Division of the International Paper Company is adapting the color continuity medium to the furtherance of good forestry practices.

The booklet, which is illustrated with four-color drawings, shows how a typical family begins a tree farming enterprise. Suggestions to assist teachers in using the booklet in their classrooms have also been prepared.

The educational departments of ten states in the South have made arrangements for its distribution to about a million and a half school children.

Northeasterners Adopt New Humus Classification

A new classification for forest humus layers was adopted at an informal meeting of 13 Northeastern soils men at the Pack Forest near Warrensburg, N. Y., on September 7-8, 1949.

Under the chairmanship of H. A. Lunt, of the Connecticut Agricultural Experiment Station, the group adopted a "Tentative Key to the Classification of Forest Humus Layers." The classification will be tested in the field for a year before it is published.

The new classification was proposed by a committee headed by Svend O. Heiberg, which for the past year has been studying and revising a humus classification proposed by Heiberg and R. F. Chandler in 1941. The new classification includes humus types found under forest stands on areas of reforested agricultural lands and other places where the forest conditions have been altered drastically. A need for a broader classification was felt, especially in the fields of forest mapping and flood-control surveys.

Two committees were appointed to make further studies during the coming year and to report at a meeting to be held at Durham, N. H., in August or September 1950. Dr. Earl Stone, of the Cornell University School of Agronomy, is chairman of a committee on forest site classification. Prof. Gordon Day, of Rutgers University, is chairman of a committee on classification of humus layers on poorly drained soils.

Wood Technologist Appointed

Dr. Earl G. Hallouquist has recently been appointed to be in charge of a new laboratory and pilot plant devoted to wood technology as his assignment with the division of industrial research of the Washington State Institute of Technology.

According to Dr. William Pearl, institute director, better utilization of forest products and the development of new industrial uses for wood are problems of ever-increasing importance.

Trees Trimmed with Power Saw

A new lightweight tree saw has been developed that will cut off branches up to 12 inches in diameter 15 feet above the ground. In addition, the saw will fell, buck and limb trees up to 24 inches in diameter, as well as cut piling and timbers when detached from the pole and used as a hand power saw.

Weighing only ten pounds, the saw is operated by an electric motor which can be powered on either standard 115-volt home current or a portable, 750-watt gasoline engine generator. A housewife can save herself much of the work of cutting stove wood simply by plugging in a chain saw to the nearest electrical outlet.

The saw is priced at $95.00. Full details and descriptive literature are available from the manufacturer, Mall Tool Company, 7725 South Chicago Avenue, Chicago 19, Illinois.

Hillbillys Urge Good Forestry

Both the Louisiana Forestry Commission and the Florida Forest Service are utilizing the talents of hillbilly radio entertainers to convey forestry messages to the public. Popular musicians record programs in which homespun advice on fire prevention and forest management is injected. Transcriptions are then distributed to cooperating radio stations for broadcast.

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Ralph A. Sheals Advanced

Ralph A. Sheals was appointed assistant chief of the Bureau of Entomology and Plant Quartine effective October 1.

Since he first was employed by the Department of Agriculture in 1917 he has worked on projects concerned with white pine blister rust control, inspection of plants and plant products in transit to assure compliance with quarantines, and has aided in the direction of extensive cooperative control campaigns against various insect pests and plant diseases.

In his new position Mr. Sheals will be responsible for administrative matters connected with the work of the Bureau. He received training in forestry, with specialization in forest insects, at the New York State College of Forestry at Syracuse, N. Y., from which he graduated in 1917.

Reforestation Arboriculture

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I have been asked to give my ideas concerning the value of the JOURNAL OF FORESTRY for both institutional and revenue producing advertising.

Our current membership and subscription list is 50% larger than it was in 1935 when our advertising rates were last established. Over 30% of our members are employed by private industry, many of them in executive positions. These men have real purchasing power, which includes logging equipment, plant equipment, and machinery and supplies for many industrial laboratories and pilot plants. Foresters in our own company have the authority and do order several hundred thousands of dollars worth of equipment each year.

Our foresters read the JOURNAL OF FORESTRY. It reaches a very select group of readers, all of whom are interested in furthering its development as a national and international magazine.

It therefore offers a particular field for institutional and good will advertising. Forestry has become a competitive field in the matter of achievement. Private owners desire the good opinion of foresters employed by federal and state agencies concerning the progress they are making in forest management. If their accomplishments are known by the leaders in the profession, this information is widely spread from authoritative sources.

In the matter of equipment and supplies, managing foresters now have to wade through hundreds of pages of diversified advertisements in trade magazines and other periodicals. They are interested in much specialized equipment. Light mobile logging equipment with which to handle small logs, pulpwood, poles and piling; forest fire equipment, pumper trucks, hose, pumps, back pack pumps and hand tools. Chemicals for controlling insect pests, poisoning rodents, killing weeds and grass; planting and nursery equipment; special machinery for processing all sorts of forest materials; trucks, pickups, and four wheel drive equipment; loading equipment for small logs and cordwood; both stationary and mobile radio equipment of all kinds.

The list is endless. These are but a few of the articles foresters would like to see advertised in the one magazine they all read.

I am confident that such advertising at the very moderate rate charged by the JOURNAL OF FORESTRY will be very productive.

Sincerely,

SOCIETY OF AMERICAN FORESTERS

Clyde Martin

President

This is one of a series of advertisements published by the Society of American Foresters for the purpose of acquainting the membership with the advertising potentialities of their JOURNAL OF FORESTRY.

New McGRAW-HILL Books

WILDLIFE MANAGEMENT

Upland Game and General Principles

By Reuben Edwin Trippensee, Department of Forestry and Wildlife Management, University of Massachusetts. *American Forestry Series.* 479 pages, $5.00

Here is a simple, direct, quantitative approach to the process of making the land produce sustained crops of wild animals. The book gives a summary of the life histories of important game animals of North America, with techniques for their management. It also discusses the farm, the forest, and wilderness conditions as these relate to wild animals, and suggests ways whereby the land manager can make his holdings tenable for occupancy by wild animals.

HARVESTING TIMBER CROPS

By A. E. Wackerman, Duke University. *American Forestry Series.* 437 pages, $5.00

A text covering all phases of harvesting, from preliminary considerations involved in planning and preparing for the actual harvesting steps, to cost controls and records. The final chapter, devoted to regional harvesting practices, was prepared by seven contributors, each an expert in his region. The subject of timber harvesting is treated as an integral part of forestry, rather than as an independent procedure. The author covers the harvesting of all important forest products such as saw logs, pulpwood, poles, ties, and veneer blocks. Throughout, the treatment is more analytical than descriptive. The illustrations are outstanding.

WOOD TECHNOLOGY

Vol. I—Structure, Identification, Defects, and Uses of the Commercial Woods of the United States

By H. P. Brown, The New York State College of Forestry, Syracuse University; A. J. Panshin, Department of Forestry, Michigan State College, and C. C. Forsaith, The New York State College of Forestry, Syracuse University. *American Forestry Series.* 634 pages, $6.00

This book is a complete rewriting and revision of Brown and Panshin's well known *Identification of the Commercial Timbers of the United States.* It will be followed by a second volume dealing with the physical, mechanical, and chemical properties of wood. Together the volumes will constitute a complete treatment of the subject matter of wood technology. Vol. I covers factual information on the structure, identification, general properties, uses, and major defects of commercial wood in the United States. All material has been brought up to date, clarified, and presented in more logical sequence.

FARM WOOD CROPS

By John F. Preston, formerly chief of Forestry Division, Soil Conservation Service, U. S. Department of Agriculture, Washington, D. C. *American Forestry Series.* 304 pages, $3.75

A textbook for usual courses in farm forestry in colleges of agriculture. Employs a direct and practical approach and does not treat dendrology and silviculture from an academic point of view. It is a technical guide to the development of a farm woodland enterprise integrated with the farm business. It presents the farm economic angles of forestry and the forestry techniques needed in the initial stages of woods management. It shows why the farmer should grow wood as a farm crop, and, after he has decided to do it, how to take the first steps in farm woodland management.

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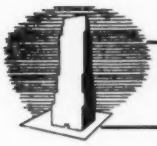

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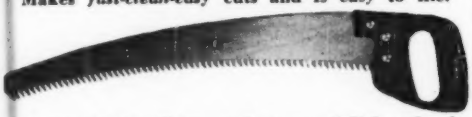

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AS LEADING distributors of forest tree seed, we are pleased to announce a new and more scientific program for the collection of coniferous tree seed.

The Manning Seed Company is instigating this program to more fully insure the success of current and future reforestation programs. The success of any national scale artificial reforestation project is partially determined by the quality of the tree seed used. In past years it has been found that the high mortality in many plantations has been due partially, but not infrequently, to the failure of planters to designate specifically the seed origin required.

It is well known that the quality of tree seed is determined by many factors which include the following basic considerations: origin, genuineness, purity and viability. It is our intention to make these factors of seed quality available to you. Foresters who want better forests should write the Chief Forester regarding their seed requirements. Details of our 1950 Seed Collection Program will be supplied upon request.

Our 1950 Collection Program is arranged to meet the needs of three types of wholesale buyers of forest tree seed.

1. ***Contract Buyers*** — for whom we collect seed each year on their own property, or from specific areas for a planned reforestation program.

2. ***Seasonal Buyers***—for whom we collect seed from specific sources in pre-determined amounts. Prices are estimated in advance, subject to crop conditions. Orders must be placed with us prior to cone harvest season.

3. ***Specific Origin Seed***—for general use by nurserymen or seed dealers. Available on a year around basis.

If you purchase seed in wholesale quantities, you will be interested in what our 1950 Scientific Collection Program can do for you. Write, wire or phone today!

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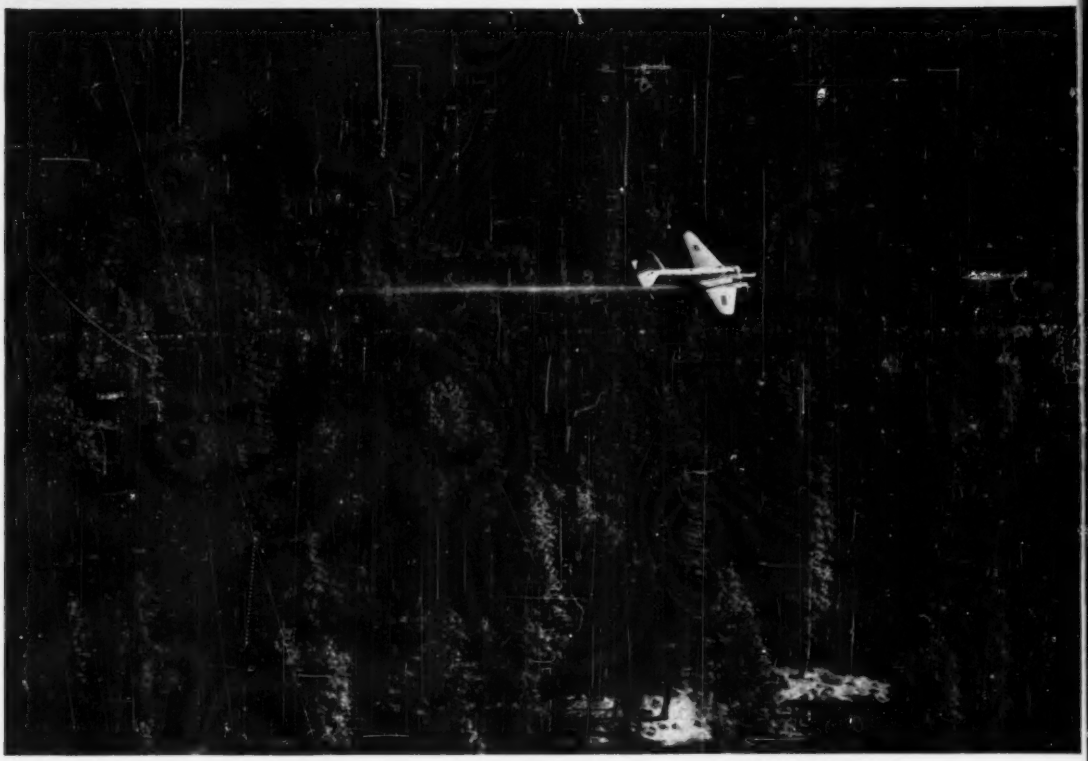

Saving the crop that makes our pulp and paper

Timber, like corn, is a crop. Timber must be nurtured and protected if the industries it supplies are to prosper and the public is to get good products at reasonable prices. The leaders in the timber business are scientific forest farmers with a long range growing program, an important part of which is the protection of the forests from devastating insects.

Among the insect enemies of the coniferous timber crop, the spruce budworm is most destructive.

This spring, private interests joined with federal and state control authorities in a large scale attack on the spruce budworm in the Northwest. Pennsalt was called on for an insecticide to be sprayed from aircraft. A new DDT compound, a Penco forest insect spray, was quickly produced at Pennsalt's Portland plant. When sprayed over 260,000 acres of Oregon spruce and fir, it killed 97% of the spruce budworm larvae.

Pennsalt will continue to apply its long experience with food crop insecticides, to the problem of protecting our forests from insect damage. Pennsalt also supplies effective herbicides to keep down the undergrowth which blocks forest roads.

These products for the timber grower are another contribution to the pulp and paper industry to which Pennsalt has been a supplier of caustic soda and chlorine for many years. All these products are made in the Northwest from Northwest raw materials and with Northwest power.

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chemicals

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